

**SOCIAL CLASS AND ACCESS TO
POSTGRADUATE EDUCATION IN THE UK:
A SOCIOLOGICAL ANALYSIS**

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Abstract

The thesis investigates the relationship between social class background and entry to postgraduate study in the UK. Very little is known about access to postgraduate study. Although there is a good deal of research about the relationship between social class and educational attainment and progression in general, this study represents the first comprehensive examination of the issue in the UK.

Understanding the relationship between social class and postgraduate study is important for three reasons. Firstly, since possession of educational qualifications strongly conditions success in the labour market, access to higher education is important. If entry to postgraduate education is affected by social class background above other factors, such inequality will obstruct attempts to ensure the UK becomes a meritocracy. Secondly, analysis of the links between postgraduate education and social class provides an opportunity to comprehend broad patterns of social change, stratification and mobility, such as the tendency for social class inequalities to be 'passed up' to the next educational level as the system expands. The thesis explores whether sociologists' characterisation of these patterns of persistent, maximally maintained and effectively maintained inequality can legitimately be extended to the postgraduate level. Finally access to postgraduate study by social class is used as a test-case for prominent sociological theories about the processes driving social class inequalities in education.

Three substantial datasets are used to examine these issues. One comprises all UK-domiciled first-degree graduates in the academic years 2001/02 – 2004/05 and their 'first destination' ($N = 897,006$). A second covers all UK-domiciled postgraduates in the same years ($N = 1,312,455$). The third dataset consists of primary data collected in 2007 via a survey of UK-domiciled postgraduates in nine English higher education institutions ($n = 2,181$). Patterns of nonresponse and missingness are investigated in detail and appropriate adjustments made. Moreover the complexity of postgraduate study, in terms of type of qualification, institutional location, subject discipline and so on is recognised and carefully incorporated into the analyses.

It is shown that some, but not all of the patterns of social class inequality observed at earlier levels of education remain in postgraduate study. An element of social class inequality at postgraduate level is related to differential prior attainment. However other elements, such as the prominence of first-degree institution in determining access to postgraduate study, can be understood as structuring patterns of postgraduate participation in a less meritocratic manner. Social class inequalities seem weakest in immediate transition to postgraduate study, but increase for later entry. These findings lend only partial support to relative risk aversion and cultural capital explanations of social class inequalities in education and suggest that processes of institutional stratification and 'tracking' are equally important. It is argued that inequalities in access to postgraduate study by social class must be taken seriously, addressed by policy makers and made subject of further research.

Declaration

I declare that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Dedication

To Ruth, Maggie and Florence.

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Data from the First Destinations Survey 2001/02, Destinations of Leavers from Higher Education Survey 2002/03 – 2004/05 and Student Record 2001/02 – 2004/05 are reproduced by permission of the Higher Education Statistics Agency Limited. HESA cannot accept responsibility for any inferences or conclusions derived from the data by third parties (see Appendix 1 for further details on the HESA datasets). Thanks are due to Kate Lang, formerly of HESA, for advice and guidance on the datasets.

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The author

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List of abbreviations

BCS	Birth Cohort Study
BHPS	British Household Panel Survey
BIS	Department for Business, Innovation and Skills
CCSR	Cathie Marsh Centre for Census and Survey Research (Univ. of Manchester)
CHERI	Centre for Higher Education Research and Information (Open University)
CUDAH	Council of University Deans of Arts and Humanities
CVCP	Committee of Vice Chancellors and Principals
DfES	Department for Education and Skills
DIUS	Department for Innovation, Universities and Skills
DLHE	Destination of Leavers from Higher Education survey
ESRC	Economic and Social Research Council
FDS	First Destinations Survey
FTE	Full-time equivalent
GCSE	General Certificate of Secondary Education
GHS	General Household Survey
GTTR	General Teacher Training Registry
HE	Higher education
HEI	Higher education institution
HESA	Higher Education Statistics Agency
HEFCE	Higher Education Funding Council for England
ITT	Initial Teacher Training
JACS	Joint Academic Coding System
LFS	Labour Force Survey
MAR	Missing at random
MCAR	Missing completely at random
NCDS	National Child Development Study
NCIHE	National Committee of Inquiry into Higher Education
NMAR	Not missing at random
NPC	National Postgraduate Committee
NS-SEC	National Statistics Socio-Economic Classification
NVQ	National Vocational Qualification
OED	Origin-Education-Destination
OR	Odds ratio
OST	Office of Science and Technology
OU	The Open University
PGCE	Postgraduate Certification in Education
QAA	Quality Assurance Agency for Higher Education
RGSC	Registrar General's Social Class
RRA	Relative Risk Aversion theory
RRR	Relative risk ratio
SARs	Sample of Anonymised Records (of the UK Population Census)
SE	Standard error
SLC	Student Loans Company
UCAS	Universities and Colleges Admissions Services
UCCA	Universities Central Council on Admissions
UUK	Universities UK
YCS	Youth Cohort Study

1 Introduction

This thesis investigates whether social class affects entry to postgraduate study in the UK. Specifically it asks whether there are differences in participation in postgraduate study according to social class of origin. It describes patterns of postgraduate participation by social class both in aggregate and in detail. It looks to account for the presence or absence of a relationship between social class and postgraduate participation by examining the main academic and demographic variables which structure higher education including institution, subject discipline, individual attainment and gender. The research represents the first comprehensive study of the social class background of UK postgraduate students. Despite a growing literature on the relationship between social class and initial entry to higher education (Archer *et al*, 2003; Gorard *et al*, 2006) and massive increases in postgraduate student numbers (Artess *et al*, 2009; Sastry, 2004a), very little is currently known about the characteristics of postgraduates and, in particular, what factors are associated with entry to postgraduate study.

Establishing whether there is a relationship between postgraduate study and social class is of consequence. Educational qualifications are the principal determinant of social class position in modern Britain (Marshall, 1997). Higher education qualifications in particular are strongly associated with entry to secure professional and managerial occupations, attracting premiums in earnings and working conditions (Bynner *et al*, 2003; O'Leary and Sloane, 2005) and this link between educational attainment and occupational outcome has been getting stronger (Heath *et al*, 1992). Postgraduate qualifications are important for entry to a growing number of professions and may confer some general advantage in the labour market as a means of distinguishing their holders from the ever-larger number of bachelors graduates. It is also clear that social class background strongly influences educational attainment. At each prior level of the education system there is a

clear association between social class background and attainment but it is not known if this continues into postgraduate education. Establishing whether this is the case is in the interest of any government which seeks to bring about meritocracy, where an individual's background is neither an advantage nor disadvantage in the allocation of positions in society. The policy consequences are twofold. Inequality at postgraduate level is an issue in its own right because such qualifications affect occupational outcomes. Beyond that though, it also indicates whether attempts to address social class inequalities at earlier educational stages might simply be negated by a 'cascading' effect, whereby greater equality in undergraduate entry results in greater inequality at postgraduate level.

My purpose is to complement description of patterns of access to postgraduate study by social class with a sociological analysis which attempts to understand how and why such patterns have arisen. Access to postgraduate education by social class therefore comprises a case study in the sociologies of higher education, social stratification and social mobility. I make the case for the sociological significance of higher education (and within it, postgraduate education), focussing particularly on the role of the university as a key institution in simultaneously promoting social mobility and reproducing social inequalities. Sociologists have identified empirical regularities in the relationship between social class and educational progression and attainment which are consistent over time and place. However it is also evident that the influence of natal social class becomes weaker in successive educational transitions; postgraduate study is potentially the first point at which social class could cease to matter. There are also several sociological theories which seek to account for *how* social class differences in education arise and are sustained. Two of the most prominent are the concept of relative risk aversion, proposed by John Goldthorpe (Breen and Goldthorpe, 1997; Goldthorpe, 1998, 2000); and the approach developed by Pierre Bourdieu which I will refer to as cultural capital theory (Bourdieu, 1996; Bourdieu

and Passeron, 1977, 1979). My empirical findings will provide a test for these and other theories in the sociology of education.

Patterns of participation in postgraduate study will be examined using three substantial datasets. The first comprises a near-census of the 'first destination' of UK-domiciled first-degree graduates across the four years 2001/02 – 2004/05 ($N = 897,006$) which includes their social class background and a range of other academic and demographic characteristics. The second is a census of all UK-domiciled postgraduate students in the same years, but which does not include social class; it is used to provide contextual information where required ($N = 1,312,455$). These two are secondary datasets obtained from the Higher Education Statistics Agency (HESA). The third dataset consists of a survey conducted specially for this thesis of postgraduate students at nine English higher education institutions ($n = 2,181$) which includes a range of information about their socio-demographic background. The datasets thus give different snapshots of the social class background of postgraduate students, covering the immediate transition from first degree to postgraduate study and separately, the social class background of current postgraduates. For the purpose of the thesis, postgraduate study is defined as that which takes place within higher education institutions (HEIs) and is designated as postgraduate by them. It thus includes higher degrees, postgraduate diplomas and certificates but excludes other further study which happens to have been taken by those of graduate status. It also excludes masters qualifications which are taken as a first degree, such as a four-year MEng or Scottish first degree. Data covers UK-domiciled students only. Problems of nonresponse and missing data were encountered with both datasets and these are very carefully considered in the thesis, which is necessary to ensure the greatest possible confidence in the findings. This is particularly important given the apparent differences in social class background which emerge across the two principal datasets.

The thesis will show that some, but not all of the patterns of social class inequality observed at earlier educational levels can also be found in postgraduate study. Some of the aggregate differences in postgraduate participation by social class can be accounted for by differential prior attainment or other artefactual effects. However others, particularly the prominent role which appears to be associated with first-degree institution, will be seen to structure patterns of participation by social class in a less than meritocratic manner. It will also be evident that social class inequalities seem to be lowest in immediate transitions but wider for later entrants. These findings, when reported in detail, will only partially support relative risk aversion and cultural capital theories, suggesting that an adequate sociological explanation needs to draw on both these and other sociological theories, such as Turner's (1960) notion of 'sponsored mobility' and a concern with institutional stratification (e.g. Shavit *et al*, 2007). Above all, I show that there is a clear case for taking seriously access to postgraduate education, which calls for further research into the processes which influence educational decision-making at this level.

Why does it matter? Higher education and social mobility

A key concern of post World War II British governments of all political hues has been meritocracy and equality of opportunity. Education has come to adopt an increasingly prominent position in bringing about a meritocratic society, replacing social class of origin: "in the modern world education is one of the primary determinants, perhaps *the* primary determinant, of one's life chances" (Heath *et al*, 1992, p. 217; original emphasis). There remains a link between class of origin and class of destination, but it is one mediated by level of qualification. The direct link between class of origin and class of destination has thus weakened somewhat; but the links between origin and level of education and between education and destination have respectively remained stable and strengthened (Heath *et al*,

1992; Heath, 2000).¹ Marshall, explaining findings from the British leg of Olin-Wright's CASMIN project, summarises the association thus:

Among males, higher educational achievement guarantees equal chances of entry into service-class occupations, irrespective of social background. However at lower educational levels, service-class origins offer at least some protection against downward class mobility

(Marshall, 1997, p.191)

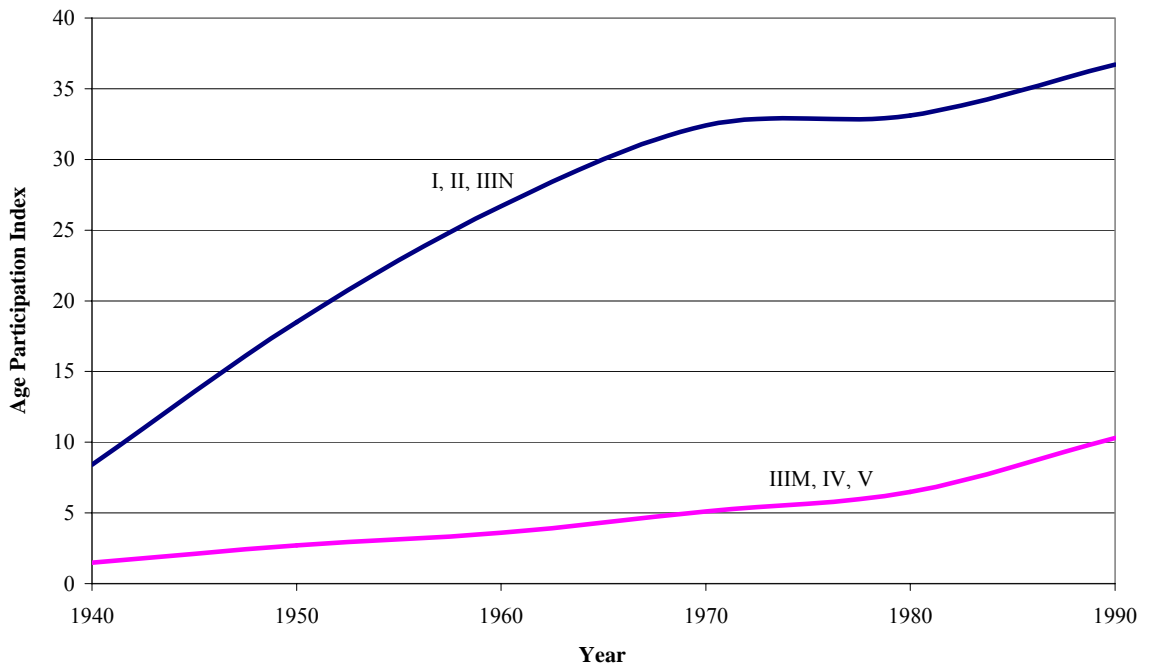
As Heath *et al* (1992) observe, Blau and Duncan's (1967) thesis that the 'logic of industrialism' would lead to the withering away of these kinds of inequalities has not been borne out. Rather educational inequalities have remained fairly constant since 1945, in spite of overall expansion in the system (Breen, 2005). Thus an increase in the absolute number of working-class students in higher education has not substantially shifted the relative odds of achieving higher education for those of a working-class background – with all its attendant consequences for social mobility (Ross, 2003a).

Expansion of higher education as means of promoting both social mobility and economic growth have been highly prominent elements of the New Labour project as seen in the thinking, policy and action of the Blair and Brown governments since 1997. General expansion of higher education predates Labour's most recent period in office (and is a global trend); however the attention given to 'widening participation' in education began in earnest in 1997. The 'Dearing Report' which was published that year provided clear evidence of social class inequalities in initial higher education participation (Robertson, 1997) and made a number of recommendations about how government and HEIs should seek to address these (NCIHE, 1997). Evidence presented by Dearing showed a familiar story: higher education participation rates for manual workers' children had increased

¹ Debate continues about the stability of relative mobility rates. Heath and Payne (2000) for instance show changes in mobility rates across cohorts, with some improvement in mobility chances for the working class. Blanden *et al* (2004) argue there has been a decline in mobility rates under New Labour, but this has been challenged on empirical and methodological grounds (Devine, 2009; Goldthorpe and Jackson, 2007; Goldthorpe and Mills, 2008; Gorard, 2008). There is also some evidence that class inequalities are seen in occupational entry irrespective of education (Brennan and Shah, 2003; Brown and Hesketh, 2001; Brown and Scase, 1994; Jackson, 2001, 2007).

substantially, but so had those for non-manual workers' children. The effect of overall expansion in higher education did not materially diminish the relative advantage of the latter groups (see Figure 1.1).

Figure 1.1: Higher Education Age Participation Index by Registrar General's Social Class, 1940 - 1990



Source: Robertson and Hillman (1997), Table 1.1

Since 1997 there has been huge investment in activities in schools, colleges and universities to encourage and support children from those social classes which have traditionally exhibited low rates of participation in higher education. Monitoring of relevant data has increased, with the regular publication of performance indicators for each higher education institution on their progress in widening participation. There has also been a noticeable increase in the volume of research on the topic by academics, practitioners, government and charities. Inquiries into access (e.g. Select Committee on Education and Employment, 2001); university admissions (Admissions to Higher Education Steering Group, 2004), entry to the professions (Langlands, 2005; Panel on Fair Access to the Professions, 2009) and so on have also featured.

The concern with widening participation as a means of ensuring fairness and meritocracy was summed up by Lord Mandelson in his first speech on higher education after assuming ministerial responsibility for it:

If a university education is an entry ticket to the best paid employment and a preparation for a globalised world of work, then access to it will inevitably define the degree of social mobility that we're able to achieve in Britain. It is not enough for universities simply to confer life advantages from one generation of professionals to their children. Everyone should be able to aspire to those advantages – on the basis of merit, not the lottery of birth.

(Mandelson, 2009)

As Devine (2009, p. 609) has pointed out, Labour has a “modest equalitarian agenda”. That is, it is concerned with equality of opportunity, but less with equality of outcome. In this ‘weak’ version of meritocracy (White, 2009), the emphasis is placed on removing obstacles to the educational success of the meritorious; however ‘merit’ has tended to be taken at face value, when there may be grounds for believing both definitions of merit and the processes by which merit is confirmed (such as through examination success) to be socially loaded against the disadvantaged. Some critics of New Labour policy have argued that its enthusiasm for elitism and market forces in education contradict its equal opportunities rhetoric (e.g. Ball, 2007, 2008). In higher education this has meant policies which favour certain kinds of universities over others, such as through concentration of funding (Leathwood, 2004); and to the introduction of student contributions to tuition fees and ‘top-up’ fees, which some have argued will dissuade the very students which widening participation policies are trying to attract (Callender, 2005; Hutchings, 2003).² Most of the substantial opposition to the introduction of and increase in tuition fees as the relevant bills passed through Parliament explicitly addressed questions of meritocracy.

² This fear has not been borne out in overall participation rates by social class since the introduction of tuition fees in 1998 and top-up fees in 2004 (Devine, 2009). However the proportion of first-degree entrants from NS-SEC groups 4 – 7 has increased only from 28.4% to 29.5% in the period 2002/03 to 2007/08 (sources: HESA, 2007, 2009a).

Given the focus on widening participation and fair access, it is perhaps surprising that only very recently has there been any recognition that such concerns should extend to postgraduate education. Hitherto, the focus has been exclusively on access to undergraduate education, typically the full-time first degree. The Higher Education Funding Council for England's (HEFCE) first 'widening participation and research' strategy (HEFCE, 2004) included only two short paragraphs on access to postgraduate study (which confirmed it would not prioritise this area); its most recent update (HEFCE, 2008) does not mention postgraduate study at all. This is in spite of huge growth in postgraduate numbers, the requirement for a postgraduate qualification for some professional careers and the popularity of postgraduate study as a 'first destination' for new graduates. In 2007 for instance, 15% of 2006 first-degree graduates had entered further study or training (source: HESA, 2008a), with a survey of the career intentions of 15,000 2009 graduates suggesting 26% planned to stay on (High Fliers, 2009), faced with the worst graduate job market in years. In perhaps the first recognition of the possibility that inequalities may be 'passed up' to postgraduate level, the former Secretary of State for Innovation, Universities and Skills, John Denham, remarked:

as taught masters increasingly become an additional pre-employment qualification, there is concern that the gap we are closing as we widen participation for first degrees may open again if the best employment is only open to those who can fund their MSc or MA.

(Denham, 2009)

It is possible that the graduation of the first cohort to have been subject to 'top-up' fees of £3,000 per annum has sharpened the focus on access to postgraduate study. Alan Milburn's report into access to the professions, which has received the endorsement of the Prime Minister and the First Secretary, argued:

postgraduate degrees [...] have increasingly become an important route into many professional careers – in the law, creative industries, the Civil Service, management professions and others. But these courses are substantially more expensive than undergraduate degrees – often costing up to £12,000 per year – and there is no student support framework equivalent to the framework for undergraduates. If fair access is to be possible, this issue will need to be addressed.

(Panel on Fair Access to the Professions, 2009, p. 95)

Possibly as a direct result, Lord Mandelson announced, in July 2009, a review of postgraduate education by the government's Director General of Science and Research, to report in early 2010.

Clearly then, there is an effect of social class on educational opportunity. Mitigating this effect has been a recurring preoccupation of British governments, particularly the current one. Access to higher education has formed a central element of its policy focus, but it is only very recently that any consideration has been given to the importance of access to postgraduate qualifications and the possible impact this could have on equality of opportunity. This is surprising given the huge growth in postgraduate numbers seen in recent years: there are today more students at the University of Manchester than there were postgraduates in the whole of the UK in 1970/71; similarly there are now more postgraduates in the UK than there were full-time students (at any level) in 1985 (sources: The University of Manchester website 'Students and staff'; Office for National Statistics, 2005; Hansard, 12 July 1989). In the next section I consider this profound growth in higher education and its broader sociological implications. This provides an overview of higher education's role and significance in social change and gives a broader sociological context to the specific concerns of this thesis, a theme which is further developed in the next chapter.

The growth of higher education and its sociological significance

I am writing this chapter sitting in my office on a university campus the size of a large housing estate. The university is set to double its physical size in the next ten to twenty years. Despite having some 13,000 students and 3,000 staff, it is considered a small institution. It is one of the largest employers in its host city and has a financial turnover of

more than £200 million per annum. In unofficial rankings, the university is placed among the top ten or fifteen institutions in the UK and in the world top 100. Fifty years ago, it did not exist. Nearly all of the students who today fill its classrooms and cafés would, in my parents' generation, have left school at the end of compulsory education and entered employment, never to return. Yet this is no remarkable institution – its story is a common one in the UK, in Europe and beyond.

Growth in higher education, which began in the early nineteenth century, accelerated through the twentieth and continues into the twenty-first. This huge change within the university field was accompanied by radical shifts in society and the economy, huge advances in knowledge, technology, standards of living, population size and life expectancy. From a niche role training clergy, physicians and lawyers, universities have expanded into research on a large scale and the provision of an educated class for the civil service and the professions, a role which has become increasingly significant with the shift towards an economy dominated by the service sector (Perkin, 1989).

Higher education itself has evinced a curious combination of continuity and change. Around me students work on laptop computers, writing essays in disciplines which have not long existed (sociology among them). Their number includes a female majority, a large proportion from ethnic minorities or from overseas (and certainly plenty of non-Anglicans), many being first-generation students and from working-class backgrounds. However they still largely study away from home, living in rooms not much larger than a monastic cell, following an academic year the basic pattern of which has changed little in centuries. Vestiges of medieval ritual linger, even in the newest of universities and academic hierarchies and distinctions of status endure. Above all perhaps, the university's role as legitimator of knowledge has grown, in our increasingly secular age, to one where it consecrates ideas and people through research and the awarding of qualifications.

Into this peculiar mix has come postgraduate study. Although the doctorate has a long history as a degree of the ‘higher’ faculties in the medieval university, modern postgraduate qualifications are recent inventions (Simpson, 1983). Higher degrees bear the hallmark of earlier times, particularly the PhD, with its echoes of the guild apprenticeship. One might continue to believe, then, that postgraduate education is an esoteric, inconsequential and marginal pursuit: according to the Quarterly Labour Force Survey (LFS) for the third quarter of 2008, only 4% of the British population aged 22 or over hold a higher degree. Indeed postgraduate study represents a minority within a minority as the majority of each age cohort does not enter university in the first place. Postgraduate study (and university research) is commonly understood as somewhat insular and introspective, a rather monkish existence.³ It could therefore seem incongruous that postgraduate education – or indeed universities in general – be seen as sociologically significant. However the take-off in postgraduate education is distinctly contemporary and has its roots in the same ‘inflationary’ pressures (and perhaps to a lesser extent, technocratic requirements for high-level skills) which drove undergraduate expansion. It may have been a quiet revolution, but the growth in postgraduate study has been revolutionary nonetheless, even if it has passed sociologists of education largely unnoticed. Whilst total HE enrolments grew by a factor of 35, from about 71,000 at the beginning of the Second World War to almost 2.5 million in 2007/08, postgraduates went from 3,000 to 560,000 over the same period – that is numbers increased by a factor of 187. Since 1990/91 alone, postgraduate enrolments have more than *quintupled* (sources: Simpson, 1983; Committee on Higher Education, 1963; HESA, 2009).

Theoretically there is a lot at stake, since the sociology of education has, in the work of some of the main protagonists, intimate connections to broader sociologies of

³ I am thinking here of the stock fictional portrayal of research students, the archetype of which is perhaps Lionel Zipser in Sharpe’s (1974) *Porterhouse Blue*, writing a thesis on the influence of pumpernickel in medieval Westphalia.

knowledge, power and stratification and indeed to social theory. Halsey, in justifying his interest in the universities, enlists Weber, who

identified two...forms of power – the *traditional* and the *rational* – and the twentieth-century history of the universities may be understood as a struggle between drives to express these underlying forms of authority in the curriculum and organization of the university and its claims to enter its alumni into positions of occupational and social authority. The sociology of education is essentially a study of these issues.

(Halsey, 1992, pp. 36 – 37)

He further notes that

[u]niversities have always played a role in social stratification, controlling access to highly valued cultural elements, differentiating the capacity of individuals to enter a hierarchy of labour markets, and therefore being intrinsically inegalitarian institutions

(Halsey, 1992, p. 18)

Similarly, Wacquant, in his foreword to Bourdieu's *The State Nobility* (1996, p. xviii) argues that the latter's interest in universities is about much more than the 'field' of higher education *per se*:

The State Nobility reveals Bourdieu's sociology "of education" for what it truly is:...a generative anthropology of *powers* focused on the special contribution that symbolic forms [i.e. educational credentials] bring to their operation, conversion, and naturalization.

In assessing theoretical explanations of patterns of access to higher education there is an opportunity to gain a broader insight into social processes governing the general transmission of advantage, particularly the respective weight of material and cultural factors. Higher education is, in Bourdieu's parlance, a 'field' - that is an arena in which power is exercised which is autonomous to a greater or lesser extent from other such arenas (e.g. politics, the media, the economy etc.) and which has its own forms of capital which are not straightforwardly transferable to other realms. Far from being a pure and objective endeavour then, academia – as every campus novelist knows – is subject to the same vagaries of prestige, status conflict and politicking as other areas of life. The findings

of this thesis will make clear how and to what extent these vagaries affect postgraduate participation.

In a sense there are parallels between change and continuity in higher education, and change and continuity in social stratification. Devine (2004, p.171) points out that “stories of [long-range social] mobility are ‘two a penny’” but that such absolute change has occurred in the context of remarkable stability in relative mobility chances for different social classes. Similarly, there has been huge growth in the university sector, with accompanying substantial upward shifts in participation rates. Stories of *educational* mobility are thus also ‘two a penny’ but relative social class inequalities remain stubborn here too. My own personal experience of social and educational mobility might serve as illustration here and identify some of the ways in which social class *could* influence access to postgraduate study. My parents, like their parents, left school with no qualifications for working-class occupations. I am an only child, but from a very large extended family, yet only one of my 28 cousins has a degree. I am the only one of my generation to have a postgraduate qualification. My educational progress was unproblematic until I graduated from my first degree. Hoping to enrol for a doctorate, I secured offers from three different universities but no funding. I was faced with waiting over the summer to hear whether I might be awarded a university studentship. Instead I sought – and luckily found – a graduate job, although I remained bitterly disappointed that I was not continuing with my studies.

Reflecting on why I found myself in this situation, various different explanations presented themselves. Perhaps it was about me personally: I simply wasn’t of the same standard as other candidates in terms of academic ability. Perhaps it was my financial position: I could not afford to wait around for an uncertain scholarship outcome and face unemployment if unsuccessful – and there was no possibility of financial support from my family. Perhaps it was related to a lack of suitable contacts or an insufficient ‘feel for the

game’: had I gone to the ‘wrong’ university for my first degree? Had I made naïve choices about a PhD topic and tried to be too independent, choices I would not have made with the ‘right’ insider knowledge? Should I have done a masters degree first? Was it just bad luck? In my musings are hints of the explanations sociologists have developed to account for class inequalities in education and which will be explored in this thesis: economic factors, cultural factors and signifiers of attainment. To evaluate properly these sociological explanations though, one must understand whether patterns of participation in postgraduate study are indeed affected by social class at the aggregate level. The possibility must be left open that social class does not really matter for entry to postgraduate study. After all, here I am writing my thesis.

The ostensible focus of the research then, is whether social class affects entry to postgraduate study. This is important because educational attainment in modern societies generally leads to economic and social rewards which mean it is potentially a means for the reproduction of advantage and inequality. Such a system will affect individual lives, but it also part of the grander sweep of history and large-scale social change to which so much of sociology has been addressed. The question of who gains postgraduate qualifications from universities is a part, albeit a small one, of this broader story.

Organisation of the thesis

Against this background, in the next chapter, Chapter 2, I sketch out the origins and development of postgraduate study and its place within the university. In considering the medieval university, what we now call postgraduate study is an anachronism, although masters and doctorates existed. I show that the modern concept of postgraduate education is relatively recent and situate the growth of postgraduate study within the broader trends of education and social change in which higher education has been both catalyst and

reactant. Finally I identify the main patterns and trends affecting contemporary postgraduate education in the UK in order to ensure a proper context is given for the analysis of patterns of participation by social class which are presented in later chapters.

Chapter 3 reviews sociological knowledge and theory about the relationship between social class and education. Here I outline notions of ‘persistent’, ‘maximally maintained’ and ‘effectively maintained’ inequality and that of ‘credential inflation’. I also consider the difference between ‘primary’ and ‘secondary’ effects and suggest that questions of institutional ‘tracking’ are likely to be important in understanding access to postgraduate study but note the key role of prior educational attainment. I review the main sociological theories which will be tested in the thesis, Goldthorpe’s relative risk aversion theory and Bourdieu’s cultural capital theory. I also summarise the small amount of previous research on social class and postgraduate study.

Chapter 4 describes the datasets used and justifies their appropriateness for addressing my research questions. It also describes the online survey and explains how and why this was constructed and implemented. Part of this discussion involves a reflection on the ontology and epistemology of the concept of social class, where I argue that adopting the National Statistics Socioeconomic Classification (NS-SEC) operationalisation of occupational social class is the most practical option, despite some misgivings about its theoretical basis. Together, the three datasets give a picture of the background of postgraduate students which is both broad and deep. I conclude that the use of secondary data and an online survey considerably extend the scope of what is achievable to a lone doctoral researcher. However problems were experienced with missing data and nonresponse and in Chapter 5 I investigate why this might be the case and put in place various measures to mitigate and adjust for shortcomings in the datasets.

The analysis of social class differences in progression from a first degree to postgraduate study begins in Chapter 5, where I show that, at the aggregate level there are

class differences in progression to higher degrees and the Postgraduate Certificate in Education (PGCE). In Chapter 6 I make a trivariate examination of a number of candidate intervening variables which might account for and diminish the aggregate social class differences and find that controlling for academic factors (subject discipline, institution and classification of the first degree) substantially reduces social class inequalities in progression to postgraduate study.

In Chapter 7 a range of multivariate models are fitted to the data to investigate further the factors associated with progression to a postgraduate degree. Multinomial models are fitted to account for the range of possible outcomes for a new graduate, which include further study, unemployment or employment. Partly because first degree institution shows up as important in the analyses, multilevel models are also fitted in recognition of the ‘nesting’ of first degree graduates in institutions. Both sets of models confirm the findings in Chapter 6 that the apparent effect of social class on progression to postgraduate study seems largely to operate through academic factors, although there is some residual effect and class differences in progression to a PGCE are less easily accounted for. Analysis of reported motivations for entering postgraduate study show little social class difference amongst either those progressing immediately to further study or current postgraduates. However comparison of the social class of current postgraduates shows clear differences from the first degree graduates, suggesting a shift to social class exclusivity in later transitions.

This is pursued in more detail in Chapter 8, where the results of the online survey of current postgraduates are analysed. Here it is shown that postgraduates’ parents are very highly qualified themselves and those from professional/managerial homes are substantially overrepresented. The postgraduates’ current circumstances are investigated, with special attention paid to financial matters. Postgraduates from a working-class background appear less likely to have student debts, but there were few social class

differences in source of funding for postgraduate study. Institution again looms large in influencing entry to postgraduate study as graduates of 'old' universities are heavily overrepresented among respondents to the survey.

In the concluding chapter, Chapter 9, I review my findings in relation to the concepts and theories examined in Chapter 3 and summarise the implications of the study for the sociologies of education and stratification. I highlight the implications of my conclusions for policy. Although evidence of social class inequality in access to postgraduate study is uncovered, part of this will be attributed to differential attainment and subject choice. However an important role emerges for first-degree institution. A key finding is the apparent increase in social class inequalities in later entry to postgraduate study. My results will only partly support the sociological theories I set out to test, suggesting some new interpretations and avenues for further investigation.

2 Postgraduate study in context

Introduction

This chapter traces the development of postgraduate study in the context of the rise of the university as an institution, from its origins in medieval times to an outline of the contemporary UK postgraduate landscape. It provides a context and necessary factual detail about postgraduate study to inform the chapters which follow. Chapter 3 will focus on sociological debates and explanations of the persistent relationship between social class and educational attainment. In the current chapter, I show that universities and university education are intimately connected to the broader patterns of social change and social mobility which concern the sociologies of stratification and education. I also describe the key features and characteristics of UK postgraduate education today.

There are six main sections. The first gives a brief overview of the emergence of universities and the phenomenal period of growth which they have experienced in the last 150 years or so. This process was closely associated with broader social changes and in the second section I illustrate how these both impacted on and grew out of higher education. Growth was not experienced equally across all groups in the population: higher education's role has, according to sociologists, always been partly about social differentiation (Halsey, 1992) or indeed consecration of an elite (Bourdieu, 1996). Understanding this history will help to situate contemporary patterns of access to postgraduate study by social class in their broader social context. The third section below on 'the widening base of student recruitment' reviews historical inequalities in access to higher education, showing that differences by social class appear most resistant to change.

Despite being necessarily embedded in their host societies and thus subject to the forces of social, historical and economic change which affect those societies, universities

can also usefully be considered as part of a relatively autonomous system, or as Bourdieu (1988) would have it, a 'field' of the social system. Thus postgraduate study is also affected by practices and forces which are endogenous to higher education, related to the organisation of studies, institutional arrangements and differences between academic disciplines. To give a banal example, the separation of university studies into various levels (sub-degree, undergraduate, postgraduate taught, postgraduate research) has largely, if not entirely, emerged through debates internal to higher education itself. These peculiarities of higher education in general and postgraduate study in particular need to be understood in order properly to investigate patterns of entry to postgraduate education. The sections 'the emergence of postgraduate studies' and 'postgraduate study today' provide the necessary background. Finally, since it differs substantially from the regime at undergraduate level, I describe the funding support available to postgraduate students.

I begin by considering the emergence of the university as an institution and its rise to increasing social, political and economic prominence by the beginning of the twenty-first century.

The rise of universities

Given the momentous social and technological changes and devastating wars which characterised it, claiming that the twentieth century was the century of the university is certainly an exaggeration. Nevertheless, in terms of the millennium of university history since the founding of the University of Bologna in 1088, the twentieth century is undoubtedly the single most important. It marked an institutionalisation of the production of knowledge in western society and an exponential growth in the number of students and higher education institutions. From a niche role as the training ground for the clergy, lawyers and physicians (and perhaps by the late eighteenth century as a finishing school for

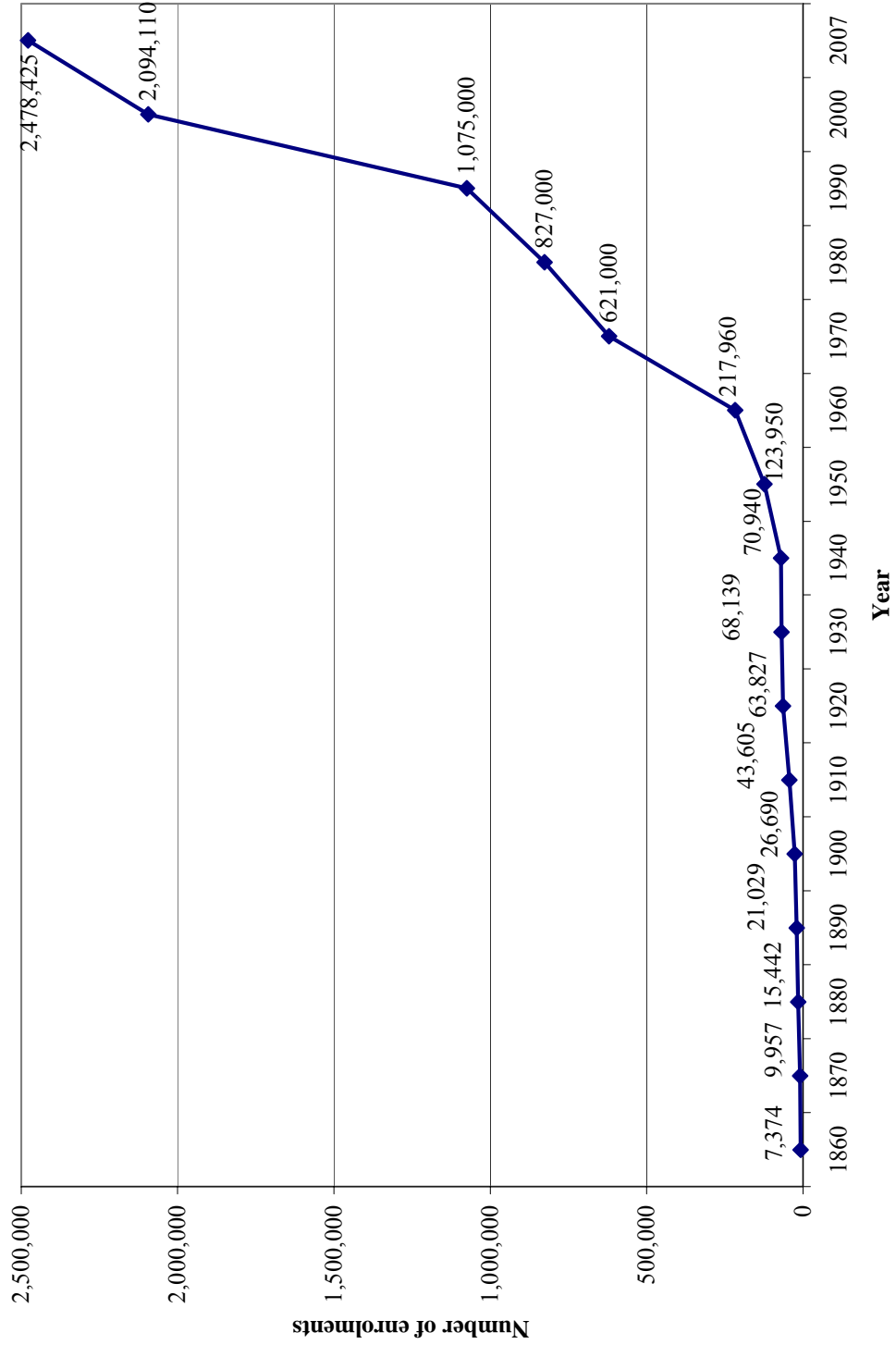
the sons of the gentry), universities in the twentieth century became mainstream institutions with a global reach.

In the United Kingdom, at the turn of the twentieth century there were just a handful of universities: in England, Oxford, Cambridge, Durham, Manchester and London, plus a few university colleges which would become full universities prior to 1914 (Stevens, 2004); in Scotland St. Andrews, Aberdeen, Edinburgh and Glasgow; the University of Wales; and in Ireland the Queen's University in Belfast (Graham, 2002; Ross, 2003b; Stevens, 2004). This compares to 169 university-level institutions in 2008 (UUK, 2008), with several colleges of higher education receiving university designation since then.

Student numbers in British universities at the turn of the century stood at around 20,000; there was some increase in numbers so that by the 1920s there were over 40,000 university students, but in the two decades to the end of World War Two growth was only slight (Ross, 2003b). By contrast, total student numbers in UK HEIs in 2006/07 stood at almost 2.5 million, an increase of more than a hundredfold. Many individual universities now have more students than there were in the whole country in 1900. Figure 2.1 charts this staggering growth in student numbers. The scale of the graph hides the rapid relative growth in the century to 1950, but captures well the take-off in numbers following the establishment of new institutions and revision of admission criteria and funding arrangements associated with the Anderson and Robbins reports of 1960 and 1963 respectively. Of course there has been some shift in the nature of aspects of non-degree higher education, such as teacher training and higher technical courses: whilst these are now largely incorporated into the higher education sector, they were not considered in the same way in the past. General population growth over the period in question was substantial,⁴ as was the expansion of secondary schooling, which did not become

⁴ The UK population in 1861 was around 29 million (including Ireland) (Mitchell, 1971, p.9); by the first decade of the twentieth century it was around 38 million (Office for National Statistics, 2004, Table 1.7, p. 19); by mid-2007 the UK population was almost 61 million (National Statistics, 2008).

Figure 2.1: Higher education enrolments in the UK c.1860 - 2007



Notes: all HE students, (i.e. university and non-university, all levels, includes overseas students studying in Britain).

Sources: Jarausch (1983, tables 1 and 2 pp. 13 and 15), 1860 – 1930; Committee on Higher Education (1963, table 3 p. 15) 1940 – 1960; 1940 is 1938/39, 1950 is 1954/55, 1960 is 1962/63; Office for National Statistics (2005, table 3.9, p. 37) 1970 – 1990; HESA (2002, table 0a) 2000; HESA (2009b, table 0a) 2007.

compulsory and free until 1944 (Jones, 2003). However neither is close to providing a sufficient explanation for higher education expansion as measured in age-cohort participation rates. Lowe (1983) estimates that 0.185% of 20-24 year-olds went to university in 1861, equivalent to 185 out of every 100,000 in that age group.⁵ By 1901, this had risen to around 0.8% and 4.0% by 1962 (Committee on Higher Education, 1963). The provisional participation rate for 2007/08 for England was 43% (Department for Innovation, Universities and Skills, 2009); it is higher in Scotland. Whilst there are some differences in how these figures were calculated, these do not materially affect the conclusion that there was staggering growth in participation in higher education across the 150 year period.

State expenditure on higher education has also mushroomed in the UK. Oxford and Cambridge traditionally supported themselves via the large endowments of the colleges and the levy of tuition fees. State support in the late nineteenth century was limited to tiny grants to the university colleges.⁶ Expenditures increased through the twentieth century, including direct grants to higher education institutions and fees and maintenance support to students. The establishment of the University Grants Committee in 1919 signalled a significant increase in government financial commitment and by the late 1930s around one-third of university expenditure was provided by the state (Perkin, 1983). The Robbins report estimated that state expenditure on higher education in 1962/63 was some £219 million per annum (Committee on Higher Education, 1963); by 1979/80 university income was over £1 billion per annum (Halsey, 1988); in 2003/04 it comprised around 0.8% of Gross Domestic Product (UUK, 2008). In England alone, the Higher Education Funding Council for England will spend almost £8 billion in 2009/10 (HEFCE, 2009a).

As these statistics on student numbers and financial turnover show, there was a phenomenal growth in the prominence of universities during the twentieth century. This

⁵ Interestingly the participation rate just prior to the English Civil War is thought to have been much higher, at around 1.1% of the age group (Perkin, 1983).

⁶ For instance, a total of £15,000 was disbursed to the university colleges in 1889 (Stevens, 2004).

take-off accelerated in the UK during the 1960s, with growth continuing throughout the remainder of the century. One might concur with Halsey (1992) that there had been a ‘decline of donnish dominion’; but at the same time as the influence of university-based public intellectuals was in decline, higher education’s overall significance in Britain and other societies grew and grew.

Higher education, social change and social reproduction

The university as an institution has clearly exploded in size and importance over the last century. Perkin (1983, p.218) goes so far as to suggest that the transformation had turned universities from “a finishing school for young gentlemen” prior to 1900 to “the central power house of modern industry and society” following the First World War. This rapid shift to centre-stage has been accounted for by scholars in differing, but not necessarily mutually exclusive, ways. Many of the factors cited are exogenous, although as expansion proceeds some identify endogenous factors such as institutions’ desire to achieve financial sustainability through growth and the need to create careers for graduates in new subjects. One perspective sees universities as filling the space vacated by the church in increasingly secularised western nations, providing scholarly training, a form of legitimation of the state (or at least of the allocation of state offices on grounds of merit rather than patronage or the purchase of sinecure) and a separate, albeit subaltern power base to that of business, e.g. (Bourdieu, 1988, 1996). Others point to the demand for increasingly skilled intellectual workers for jobs requiring mental rather than physical labour (e.g. Lowe, 1983); higher education (particularly science) as a source of national pride and potential military and economic advantage (e.g. Simpson, 1983); increased disposable incomes permitting consumption of education as a good (Jarausch, 1983); and credential inflation as people try to secure an advantage in the labour market through the possession of higher and higher

qualifications, (e.g. Collins, 1979; Wolf, 2002). Wolf argues that this latter factor is the most important. She contends that the case for higher education's centrality in ensuring economic growth has not been adequately made, but that nonetheless:

as long as university remains the best...way of getting a crack at desirable occupations, then enrolments will stay buoyant no matter how badly paid some university graduates are. Middle-class families now perceive degrees as a necessity for their children; more and more of a government's key voters consequently have a stake in maintaining the value of acquiring them....None of this makes it likely that a modern democratic government will prune its university sector.

(Wolf, 2002, p. 198).

Thus as the basis for maintaining or advancing one's socio-economic standing shifts, at least for those outside the very wealthiest stratum, from direct inheritance to the possession of educational qualifications (Heath *et al*, 1992; Marshall, 1997), the importance of the university and its degrees increases, beginning an upward spiral of credential inflation. As detailed below, there is some evidence that this has recently reached the postgraduate level, at least in terms of absolute numbers of qualifications awarded.

Regardless of whether shifts in the social class structure of Western industrialised societies and the expansion of higher education are part of the same *causal* nexus or not, they are undoubtedly coeval. Two sea-changes are evident in the British labour force during the twentieth century. The first is a massive increase in women's formal employment, both in terms of hours worked and occupations entered, a trend accompanied by women's progress in educational terms. The second is a substantial decline in the proportion of workers employed in manual occupations in the manufacturing and agricultural industries, with service sector and 'white collar' roles taking up the slack. Reviewing the period 1911 – 1981, Price and Bain (1988) report a decline in the proportion of the workforce in Great Britain in manual occupations from almost three-quarters to less than a half. Agriculture, employing around 10% of the workforce in 1911 had shrunk to around 1% by 2004 (Office for National Statistics, 2004, table 4.12, p. 52). A complimentary growth in the service industries was witnessed, including massive increases

in the proportion of the labour force engaged in managerial and professional roles across the century. The rise of what Goldthorpe and collaborators designate the ‘service class’ (e.g. Goldthorpe, 1987; Halsey *et al*, 1980) is associated with these changes. This class is comprised of higher professionals, senior managers and administrators who enjoy good market and work conditions and ‘relative autonomy’ and are generally highly-qualified.

Jarausch (1983) holds that the universities played a key role in the establishment and growth of the professions and hence the professional classes, with the older (higher) professions such as law and medicine consolidating their academic credentials and the newer professions seeking an academicisation of their training (e.g. teaching, social work and so on – a process still evident today). Perkin (1983, p.211) concurs, identifying academics as “the key profession, the profession which provides both the expertise and the experts for most of the other professions”.

‘New money’ in the form of business began to have an impression on the university during the period from 1850, although it would be some time before a substantial proportion of university graduates moved into employment in commerce and industry. The foundation of the civic universities from the late nineteenth century onwards was partly due to pressure from local business communities for suitable training schools (*sic*) and often relied on large endowments from businesses or wealthy individuals. These trends were resisted at Oxford and Cambridge, but reached them eventually, not least through a rapid broadening of the subjects taught and researched to include the natural sciences, engineering and the social sciences, displacing gradually the arts and theology (Perkin, 1983).

Thus the late modern university in Britain broke with its earlier modern and medieval forbears, moving from being an essentially Anglican institution catering to the aristocracy to one engaged with pursuits more suited to the requirements of the middle-classes who formed its new clientele: training for (a wider group of) the professions,

research, provision of a scientific or liberal education suitable for an academic career itself or placement in an expanding civil service; and to a lesser extent employment in business. Its growth coincides with these shifts in the social structure and changing patterns of social mobility.

The widening base of student recruitment?

Whilst as we shall see, universities continue to recruit from a relatively narrow section of society, the years since 1826 have seen a gradual broadening of the social profile of the student body. Initially this included the admittance of non-conformist students (mainly Roman Catholics and Jews) with the establishment of University College London and later with Acts of Parliament opening Oxford and Cambridge to ‘dissenters’ (McLelland, 1973). In 1878, London became the first institution to admit women and in 1900 30% of London’s students were female (University of London: a brief history, n.d.). Egerton and Halsey (1993) argue that the increase in female participation across the twentieth century is one of the key features of recent university history and in absolute terms women now outnumber men among the study body (Higher Education Statistics Agency, 2009). Looking at overall participation, minority ethnic groups are well represented among the student body, with all non-white groups having higher initial participation rates than the white majority (Connor *et al*, 2004).

As will be shown later however, the position for access by those from different social class backgrounds is not so straightforward and there is evidence that relative disadvantage in access to university has persisted throughout the twentieth century (Egerton and Halsey, 1993; Ross, 2003a, b). Nevertheless, the proportion of the entire student body of those from lower social class backgrounds has risen dramatically in the last hundred years. This was initially the onward march of the middle classes at the expense of

the aristocracy, as student recruitment reflected the transformation of the nature of the institution (see above). Since the 1960s, there has been an absolute increase in participation by the working classes, mainly through expansion of the system rather than relative improvement at the expense of the middle classes – in other words, the working class has been able to achieve access where this has not been at the expense of students from more privileged backgrounds (Marsh and Blackburn, 1992; Ross, 2003a, b; Shavit *et al*, 2007).

Prior to 1900, there were virtually no working-class students. Perkin (1983) reports that there was one student from a ‘plebeian’ background at Oxford in 1835, but none in 1860.⁷ Jarausch (1983) quotes a zero participation rate for the ‘lower class’ in 1870 and 1890 in Britain. This situation was well-captured by Thomas Hardy, whose *Jude the Obscure*, stonemason and poor country orphan, seeks entry to the university at ‘Christminster’, based on his self-taught knowledge of the classics. His letter of application is dismissed in reply by the Master of Biblioll (*sic*) College thus:

SIR,--I have read your letter with interest; and, judging from your description of yourself as a working-man, I venture to think that you will have a much better chance of success in life by remaining in your own sphere and sticking to your trade than by adopting any other course. That, therefore, is what I advise you to do.
(Hardy, 1998 [1895], p.117)

The main shift in the social class composition of the student body prior to the First World War was instead the trend towards displacement of the upper-class by the upper- and to some extent lower-middle classes. A part of this shift can be accounted for in the growth of student numbers overall and the small size of the upper class, but this growth itself reflects a shift away from aristocratic exclusivity.

By 1930, only around one-third of upper-class young people were entering higher education, suggesting that their peers were being displaced by bright children from the lower (mainly the middle) social classes. Whilst in the same year, around one-quarter of

⁷ Perkin notes, in contrast, that the situation in Scotland was far different, with around one-third of Glasgow’s students in the 1830s being of working-class origin, although he points out that the Scottish universities’ ‘undergraduate’ studies were closer to those of secondary school, catering for those aged between 12 and 17 – described by one contemporary source as “miserable filthy little urchins” (Perkin, 1983, pp. 208 – 209)!

university students were from manual backgrounds, the much larger size of the manual working class compared to the middle and upper classes of the period meant that cohort participation rates were vastly different, with those from professional backgrounds being something like 30 times more likely to enter university (Perkin, 1983). In the 1960s, participation rates for those from a Social Class I (higher professional) background were estimated at 45% compared to 4% for those from Social Class IIIM (skilled manual) (Committee on Higher Education, 1963).

British governments – or at least government-initiated committees such as Robbins and Dearing and ‘buffer’ bodies such as the funding councils – have taken an interest in access to higher education and participation rates, albeit intermittently. The Robbins report led to a rapid and large-scale expansion of higher education, based on the principle that a degree should be open to anyone qualified to undertake one. A latent demand was identified in the report, based on the ‘wasted potential’ of those from lower social class backgrounds who were shown to be achieving as well as their higher class peers where school and measured ‘intelligence’ were held constant, but were not accessing the necessary schools (the grammars) in the first place (Ross, 2003b).

The increase in the number of higher education institutions and funded places which followed Robbins did lead to an increase in the number of those from working-class homes going to university. The participation rate for those from Social Class IIIM (skilled manual) backgrounds almost quintupled between the early Sixties and 1995/96 from 4% to 18%. However while there was an absolute increase in participation, the relativities did not shift radically, since the rate for those from Social Class I backgrounds increased from 45% to 79% (Robertson and Hillman, 1997, table 1.2; Ross, 2003a). Research has shown that the relative chances (‘odds’) of accessing higher education according to social class background have remained virtually constant in the half-century following the Second World War (Blackburn and Jarman, 1993; Halsey, 1993; Ross, 2003a). Recent

investigation of participation looking at micro-areas has confirmed a continuing wide disparity in higher education participation rates between affluent and deprived areas: these varied, when measured in units of parliamentary constituencies, between 8% at the lowest to 69% at the highest (HEFCE, 2005a). There continue to be large differences between social classes in higher education participation rates (Chowdry *et al*, 2008; Gorard *et al*, 2006).

The general pattern then is one of massive increases in participation generally, with the position of women and religious and ethnic minorities improving to parity (and then beyond) by the end of the century. However social class remains an apparently constant relative source of inequality in higher education participation. Sociological accounts of why this might be so – and how it might apply to postgraduate studies – will be considered in the following chapter. Before considering these accounts, it is essential that the key characteristics of *postgraduate* study are understood, beginning with its relatively late appearance as an important aspect of higher education.

The emergence of postgraduate studies

Formal study beyond the first degree level, whilst not an invention of the twentieth century, did not take root until after the First World War. In the medieval university, there were no ‘postgraduates’ as such – a single qualification existed, designated either ‘master’ or ‘doctor’, the title varying internationally,⁸ possession of which gave entry to the ‘guild’ of scholars. Distinctions of level did begin to emerge, but these were essentially between subjects: the ‘higher’ faculties of law, medicine and theology began to award doctorates,⁹

⁸ Those based on the Parisian university model (which included Oxford and Cambridge) used ‘master’; Bolognese-style institutions used ‘doctor’ (Simpson, 1983).

⁹ This change is reflected today in common language, with the possessor of a bachelors degree in medicine/surgery referred to as ‘doctor’.

whilst the ‘lower’ faculty of arts¹⁰ continued to award the masters degree. The bachelorship appeared initially as signifying completion of a foundation level of study and was usually awarded around the age of eighteen. On the continent this less demanding work would shift back to the schools in time,¹¹ but in England at least, it became more demanding, replacing the mastership which eventually became a mere formality determined by length of residence.¹² In Scotland the bachelors degree never took hold and the undergraduate masters qualification remains the norm (Simpson, 1983).¹³

The University of London was the English pioneer for postgraduate degrees, introducing an earned MA and later a DSc for the science faculty (equivalent in level to the MA). A DLit (*sic*) followed. Oxford and Cambridge were slower to respond, beginning initially with bachelors degrees by research, primarily intended for graduates of other institutions who wished to become Oxbridge graduates without sitting for the formal examinations (which continued to be composed of an academically conservative mix of classics and mathematics). However with individual exceptions, both ancient universities were unenthusiastic and were largely reacting to pressure from the various Royal Commissions on their condition which reported in the mid-nineteenth century (Simpson, 1983).

The birth of the PhD degree in Britain can be pinpointed to the day, its creation being a resolution of a meeting of the United Kingdom Universities Conference on 18 May 1917 called especially to deliberate the need for a ‘lower’ doctorate.¹⁴ This unusually concerted action by the universities was in response largely to Foreign Office pressure, itself motivated by fears about superior German intellectual, scientific and consequently

¹⁰ Arts here covering *all* other subjects, including the natural sciences.

¹¹ As can be seen in the etymology of the French school-leaving qualification, the *baccalaureate*.

¹² This arrangement remains in Oxford and Cambridge to the present day, although it is much criticised.

¹³ A recent trend in England and Wales has been the awarding of ‘advanced undergraduate’ masters degrees in science and engineering subjects on completion of a four- rather than the standard three-year degree. These qualifications have titles such as MEng and MChem (Master of Engineering and Master of Chemistry respectively).

¹⁴ This body was the precursor of the Committee of Vice-Chancellors and Principals, which has subsequently been re-named Universities UK, the representative body of British universities.

military resources (Simpson, 1983). The episode demonstrates neatly how the provision of postgraduate study is often far from being motivated by ‘pure’ intellectual concerns but rather can emerge as the result of economic and political pressures. This brief history also shows that postgraduate study, particularly the contemporary distinction between research degrees, taught higher degrees and other postgraduate qualifications, is relatively new.

In fact the emergence and growth of postgraduate study as a distinct activity mirrors closely the take-off of the university in general in the twentieth century (see Figure 2.2). As with overall student numbers, obtaining accurate estimates of the postgraduate population is difficult due to changes in their method of derivation. One can have more confidence in later statistics, particularly since the establishment of HESA (and its predecessor the Universities Statistical Record) which introduced consistency and census-like coverage. These difficulties aside, there is nonetheless a fairly clear pattern of staggering growth almost certainly robust to the various errors which will have distorted published statistics.

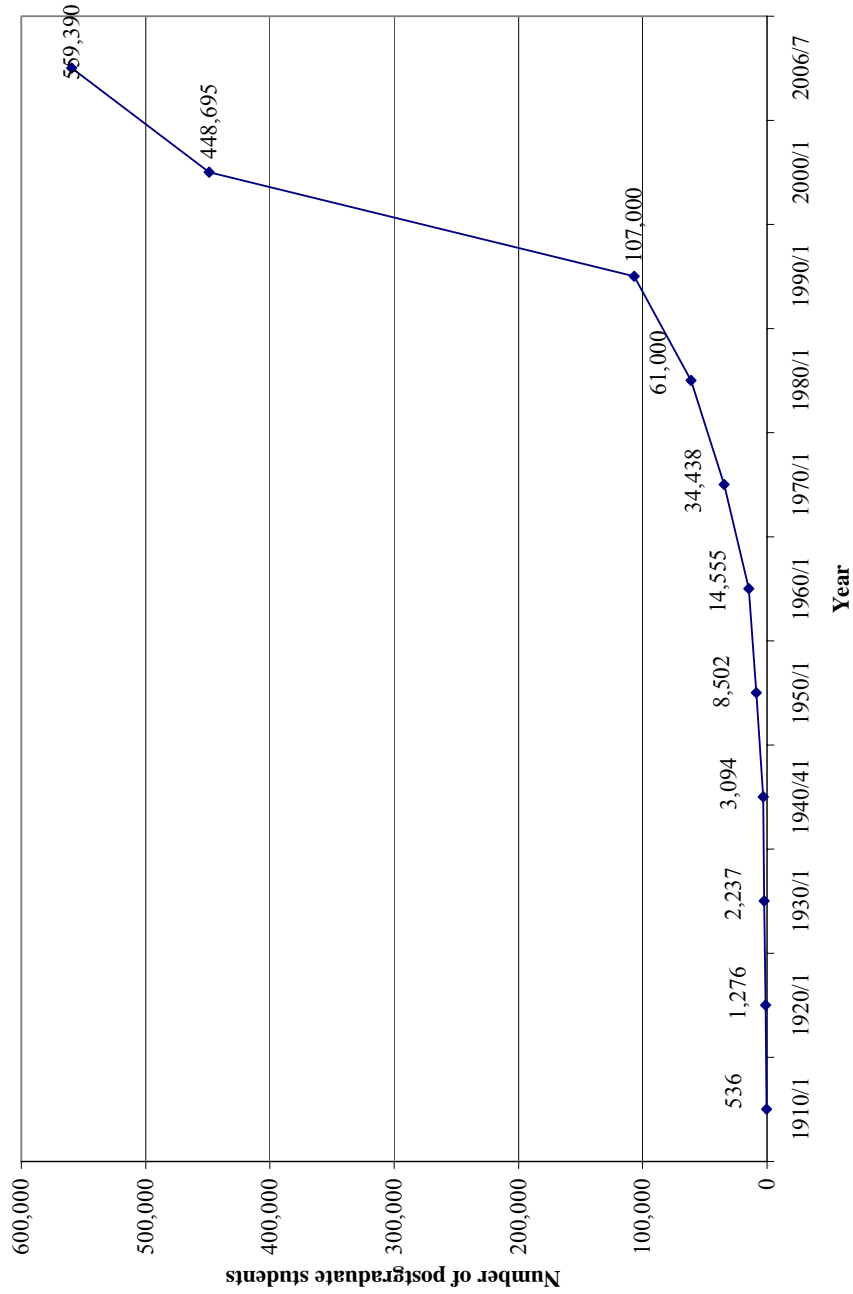
Robbins argued for the rapid expansion of postgraduate numbers citing a mix of technocratic and sociological justifications: the need for a more highly trained scientific workforce; provision of well-qualified staff to support undergraduate expansion; and

a natural presumption that the demand for postgraduate study will increase [...since] every increase of educational opportunity at one level leads almost at once to a demand for more opportunity at a higher level”

(Committee on Higher Education, 1963., pp. 100 – 101).

The Committee called for an increase in taught courses, provision of more state support for postgraduate fees and maintenance and for some professionalisation of the organisation of postgraduate studies. Rudd notes however that by 1967 the UGC was counselling against taking too many graduate students since Robbins’ targets had already been achieved and undergraduate expansion ought to be prioritised (Rudd, 1975). By 1996, when Harris’s *Review of Postgraduate Education* was published, there was no directive on

Figure 2.2: Postgraduate enrolments in the UK 1910/11 to 2006/07



Sources: Simpson (1983, p. 166, table III) 1910/11 – 1960/61 (figures exclude one-year Diploma in Education; 1940/41 figures are based on 1938/39; 1910/11 excludes Oxbridge); Office for National Statistics (2005, table 3.9, p.37), 1970/71 – 1990/91; HESA (2002) 2000/01; HESA (2009b) 2006/07.
 Notes: Simpson gives figures of 34,438 and 38,832 for 1970/71 and 1980/81 respectively. Rudd gives 39,000 for 1972/73 (1975, p.1). Robbins gives 9,505 for 1961/62 but excludes 'Faculty of Education' students (1963, p.103, table 36). All figures include part-time and overseas students.

whether postgraduate numbers should be expanded or contracted; rather the focus was on assuring the quality of provision and avoiding the cross-subsidy of postgraduate study from funds provided for full-time undergraduate students, where numbers had been tightly capped. The resulting funding model meant, at least in England, that the market for home postgraduates was essentially a free one, with no specific controls on numbers or tuition fees, with the exception of the PGCE.

In considering the emergence and growth of postgraduate study, it is worth noting the establishment of the polytechnics in the 1960s. These institutions were largely amalgams of existing technical colleges and colleges of education and were intended to provide degree and sub-degree technical education. Thirty were designated in a white paper of 1966, to be under local authority control. They were intended to provide a separate but equal higher education option in a binary system, which would not, unlike a unitary system, replicate institutional hierarchies (Halsey, 1988; Ross, 2003a; Stevens, 2004). The subsequent history of the polytechnics manifests two ironies for this policy. Firstly the binary divide appears to have confirmed rather than negated institutional status hierarchies in higher education, reflected *inter alia* in patterns of recruitment by social class and ethnicity, income and official and unofficial ratings of quality and prestige. The second irony is the ‘mission drift’ exhibited by the polytechnics towards the ‘traditional’ model of a higher education institution.¹⁵ Thus ‘academic’ subjects began to appear alongside the existing technical and vocational disciplines and there was a desire to become more research intensive and increase postgraduate numbers. As missions drifted towards those of the universities, so did the social class composition of the student body. These trends were formalised in 1988 when the Conservative government enabled ‘incorporation’ of the polytechnics, granting freedom from local authority control and

¹⁵ This trend replicated very closely the move of an earlier swathe of ‘new’ universities – the ‘civic’ universities which were promoted from university college status over the period 1880 – 1930 – towards ‘purer’ academic study and away from the more technical/industrial/vocational slant which their founders (usually industrial philanthropists) had desired (Lowe, 1983).

direct funding, a process completed in 1992 with the award of university status to all of the polytechnics (Ross, 2003a; Stevens, 2004). By 1994/95, these ‘public sector’ institutions accounted for around 30% of postgraduate students in England (calculated from HEFCE *et al*, 1996, Annex D)¹⁶ and recent growth in numbers has been faster in this part of the sector (Sastry, 2004a). These distinctions of institutional status will assume importance in the later analytical chapters.

A final development was the establishment, in 1969 of the Open University, intended as a means of making higher education accessible to anyone, regardless of level of qualification, with teaching taking place at a distance. Taught postgraduate qualifications were introduced in the 1980s; research degrees can be taken full-time in Milton Keynes or by distance learning (The Open University, History of the OU, n.d.). The OU is the UK’s largest university: in 2008/09 it had over 180,000 students, more than 30,000 of them postgraduates (The Open University, The Purpose of the OU, n.d.) and accounted for around 20% of MBA students in the UK (The Open University, History of the OU, n.d.). Its sheer size together with its mainly part-time and distance-learning character makes it a significant player in UK postgraduate education.

To conclude this section, it has been shown that postgraduate study is a relatively recent phenomenon which has emerged and grown rapidly in a manner matching the overall rise in student numbers across the last century. Student funding has been sparse in comparison with undergraduate study although apparently this has not deterred growth. Whilst postgraduate degrees were traditionally the preserve of the older, well-established institutions, increasingly new institutions, such as the polytechnic foundations and the Open University have become a presence within postgraduate education.

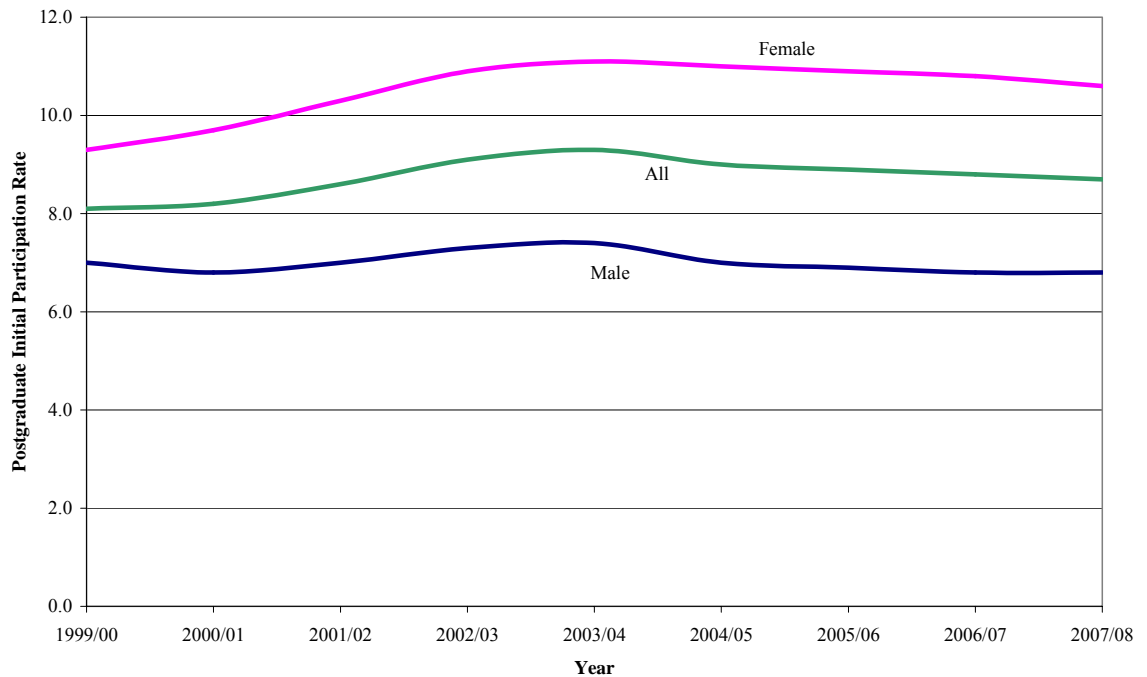
¹⁶ ‘Old’ universities accounted for around 55% of postgraduate students in the same year, the HE college sector comprised around 10% and the Open University 5%.

Postgraduate study today

In 2006/07 there were well over half-a-million postgraduate students studying at higher education institutions in the UK. Around 375,000 were from the UK, 48,000 were from the European Union with 136,000 coming from elsewhere overseas. The Postgraduate Initial Participation Rate for English-domiciled 17 – 30 year olds at UK higher education institutions has remained between 8% and 9% since 1999/2000 (Figure 2.3). Men's initial participation rate is lower than women's. More than one in every five higher education students is a postgraduate (HESA, 2009). However, without wishing to overstate the homogeneity of undergraduate study, it is nevertheless valid to characterise postgraduate study in the UK as being markedly more complex, with a wide range of types of qualification available and variations by subject, institution and mode of study apparent. These complexities make consideration of patterns of access to postgraduate study generally trickier than for the undergraduate level. It is worth considering the detail in order that observed patterns of postgraduate participation can be properly contextualised, thus avoiding the fallacy which would result from misattributing such differences to, for example, social class effects.

Two recent statistical overviews of postgraduate study in the UK (Artess *et al*, 2008; Sastry, 2004a) draw out the complexity evident in postgraduate study and inform the following account. As alluded to above, the nomenclature employed for postgraduate qualifications can be confusing, something recognised by the Dearing Committee which recommended standardisation. A masters degree for instance can refer to a four-year Scottish undergraduate qualification; an 'enhanced' undergraduate degree in a science subject, based on four years of study; a first degree from Oxford or Cambridge where the graduate has fulfilled certain residential or temporal obligations; a full-time one-year 'earned' taught postgraduate qualification; a *two-year* full time taught degree; or a one- or

Figure 2.3: Postgraduate Initial Participation Rate for English domiciled 17-30 year old first time participants in Postgraduate Courses at UK Higher Education Institutions 1999/00 – 2007/08



Source: DIUS (2009, supplementary table C, p. 17). Note that figures for 2007/08 are provisional.

two-year full-time research degree. There are a vast array of diplomas, certificates and other qualifications, often with little consistency in the length and nature of study across qualification titles, even within the same institution. The Dearing recommendation led the Quality Assurance Agency for Higher Education to establish a National Qualifications Framework, setting out various levels of postgraduate study and seeking to ensure that the appropriate titles were used for each. A particular concern was to distinguish between qualifications which were postgraduate in *level* as opposed to *time*. The typical example is the PGCE, which covers material similar to that in a Bachelor of Education degree conferring Qualified Teacher Status, but requires that entrants have a first degree in a substantive subject other than education. According to the Quality Assurance Agency for Higher Education, such a course should be designated a *Graduate Certificate in Education* rather than *Postgraduate* (QAA, 2000). Another case in point is the Master of Business

Administration degree, which is usually a kind of conversion course aimed at graduates in subjects other than business studies who have acquired some professional experience.¹⁷ In these and most other cases the QAA's framework does not appear to have been effective, presumably because of the marketing value of designating a qualification as postgraduate - and so inconsistency continues. A further relatively recent innovation is the taught or 'professional' doctorate, generally offered on a part-time basis over four or five years in professional subjects and comprising taught courses and a much smaller thesis than that demanded for the PhD. Such qualifications typically adopt names reflecting their content - EdD, EngD, DBA¹⁸ and so on. Finally attempts have been made to introduce a 'new route' PhD based on four years of study and including a significant taught element in a model similar to the North American doctorate. To circumvent the difficulties posed by naming conventions most parties classify postgraduate programmes according to the scheme adopted by HESA for characterising 'qualification aim', as shown in table 2.1. A weakness with this approach is that it is impossible to distinguish between 'genuine' masters degrees which require a first degree in the same subject for admission and conversion courses which impose no such constraint.

Some of the differences in types of postgraduate qualification coincide with differences in subject and mode of study. For example, diploma and certificate courses are much more likely to be taken part-time and to be in vocationally-oriented subjects; other subjects have few or no such qualifications available. Whilst research degrees are offered in almost all higher education subjects, the balance of taught and research students across them differs markedly as do absolute numbers. The physical sciences generally have a high proportion of research students for instance whereas in law or business studies there tend to be mainly taught students.

¹⁷ An anomaly here is the case of Law: professional conversion courses for graduates (such as the College of Law's Graduate Diploma in Law) are not always covered by HESA.

¹⁸ Doctor of Education, Doctor of Engineering and Doctor of Business Administration respectively.

Table 2.1: UK-domiciled postgraduate students by qualification aim, 2004/05

Qualification aim	Number of students
Doctorate by research	40,370
Taught doctorate	1,880
Masters by research	11,325
Taught masters	146,680
Postgraduate diploma or certificate (not PGCE)	70,830
Professional qualifications	12,060
PGCE	35,805
Other	14,225
<i>Total</i>	<i>333,175</i>

Source: HESA Student Record 2004/05

In fact subject differences are apparent however one wishes to disaggregate the postgraduate student body: overseas students, women, ethnic minorities and part-time students are distributed differently across subjects. Moreover the subject distribution of postgraduates differs markedly between postgraduate and undergraduate level such that business studies and education alone represent over 40% of postgraduates, compared to 16% of undergraduates. Nursing, on the other hand accounts for one in every ten undergraduates but only one in every fifty postgraduates (source: HESA Student Record, 2001/02 – 2004/05).

All these complexities are overlaid by institutional differentiation. Some subjects are concentrated in a particular sector (e.g. medicine and dentistry is almost exclusive to pre-1992 universities whereas media studies is heavily concentrated in the post-1992 universities). Likewise research student numbers are much larger in the old universities where research income is higher and research activity generally more intensive. Such a skewed distribution is also seen within the old university sector, with a few institutions having very large numbers of research students. There are differences in the undergraduate/postgraduate balance across institutions, some having few postgraduates, some having quite large numbers and a few institutions being exclusively postgraduate.

Sastry's (2004a) review of postgraduate education in the UK shows that whilst postgraduate study continues to grow in popularity, there has been a slight *downward* trend in the proportion of first degree graduates progressing immediately to further study (measured six months after graduation), perhaps vindicating those citing debt as a deterrent. Growth amongst home students has been mainly at the masters level and from amongst existing rather than new graduates. In fact for a large majority of postgraduate students the transition from the first degree is not contiguous. Whether demand continues to grow is in the balance: a differentiation (or credential inflation) hypothesis would see possession of a postgraduate qualification as a means of distinguishing oneself from the mass of first degree graduates. Sastry argues to the contrary that the market for postgraduate qualifications is most secure where specialist professional training or knowledge is required (e.g. the PGCE, social work, law and so on); where it is simply intended as a signal of general intellectual potential, its value is undermined by the use of existing discriminators by employers, such as classification of degree, institution attended and often A-level grades. Artess *et al's* (2008) review suggests this may be an accurate interpretation, as part-time masters graduates (presumably those combining study with a professional job) have much more lucrative labour market outcomes than those who have done full-time courses. However Sastry does not consider whether this assessment matches potential postgraduates' own *ex-ante* impressions of the graduate labour market since these perceptions, rather than the labour market 'reality', will most affect take-up. Research among taught postgraduate qualifiers at the University of Sussex showed holders of masters degrees felt they *had* achieved labour market benefits, although generally they did not believe that their postgraduate qualification was the primary factor in obtaining employment or promotion (Barber *et al*, 2004).

Postgraduate funding

In stark contrast to the situation at undergraduate level (especially from 1960), funding for postgraduate studies has typically been patchy. Initially, there was very little support available: the Department for Scientific and Industrial Research¹⁹ offered less than 250 awards each year, all for research degrees; this was raised to over 400 in 1946, but is still a small number compared to the 6,360 new awards offered by the Research Councils in 2005/06 (DIUS, 2008a, table 5.11). Funding was not available for arts subjects or for taught higher degrees until 1957, when the Research Councils were established. The number of awards doubled across the period 1957 – 1972 (Rudd, 1975). Without a state award, a student would need to support herself or might obtain discretionary support from a local authority or possibly a charity such as the Carnegie Trust in Scotland (Simpson, 1983). An exception was the one-year postgraduate Certificate in Education course intended to train graduates as schoolteachers, which in 1961/62 accounted for around one-quarter of all postgraduates (Committee on Higher Education, 1963).

The funding of postgraduate study today remains a complex business. The model used for distribution of funding council money differs across the home nations and is complicated. Although not directly relevant to this thesis, it is worth mentioning that, except for the PGCE, postgraduate numbers are not controlled by the funding councils and with a few exceptions there are no controls on tuition fees for home and European Union students.²⁰ Funding arrangements for individuals are quite fragmented, in contrast to the statutory tuition fee and maintenance provisions for full-time home undergraduates.²¹

¹⁹ A forerunner of the Department for Innovation, Universities and Skills.

²⁰ PGCE tuition fees are prescribed by the Government. The Research Councils stipulate the maximum annual tuition fee they are prepared to pay for their award holders and these fees are often taken as a guide by institutions in setting postgraduate tuition fees. However institutions are free to set their own fees, which can reach five figures for some MBA courses. There are no controls at all on fees charged to overseas students.

²¹ Uniformity of student finance arrangements at undergraduate level have begun to break down after 2003, with the four home nations having different regimes and in England, variation in the level of bursary and grant available to students across institutions.

Table 2.2: Sources of postgraduate funding provided by the state for home students studying in the UK

Source	Description	Value	No. of awards
Research Councils ^a	Studentships for advanced courses and PhD providing fees and maintenance. Tenable at institutions in Great Britain only. No maintenance award for part-time students	Up to £3,300 in tuition fee. £12,940 annual maintenance grant (more for students with dependants, in London and/or on special schemes) for 2008/09	5,000 new research awards and 1,360 advanced course awards in 2005/06
Department for Employment and Learning, Northern Ireland ^b	Similar to Research Council studentships, but tenable in Northern Ireland only		
Student Loans Company and Local Education Authority ^c	Financial support for PGCE students		Same basis as for undergraduate students: loans for fees and maintenance
Training and Development Agency for Schools ^c	Bursary for PGCE courses	£4,000 - £9,000 depending on subject/level	Equivalent to number of TDA-funded places
Student Awards Agency for Scotland ^d	Tuition fee support for PGCE course	On same basis as undergraduate courses	Not set
General Social Care Council; Care Council for Wales; Scottish Social Work Council ^e	Tuition fee and maintenance bursary for postgraduate social work training	Means-tested.	Varies
PSAS scheme ^f	Tuition fee and maintenance grant for specified vocational diploma courses (Scottish students only)	Up to £3,315 in tuition fees; up to £4,660 in maintenance depending upon circumstances for 2008/09	Approx. 1,600 quota awards for specified courses in Scotland; up to 120 awards for courses outside Scotland; 300 awards for Diploma in Legal Practice
Career Development Loan ^g	Subsidised loan which can be used to support vocational courses of up to two years duration	Loan amount of between £300 and £8,000	Not set

Sources:

^a DIUS (2008a), Research Councils UK (2008)

^b DELNI (Financial help for postgraduates, n.d.)

^c Directgov (Initial Teacher Training: what financial help can you get? n.d.)

^d SAAS (The PGDE and PGDipCE, n.d.)

^e SAAS (Postgraduate students – courses we do and do not support, n.d.)

^f SAAS (How we allocate the financial support available, n.d.)

^g Directgov (Professional and career development loans: what are they? n.d.).

Postgraduates are eligible for neither student loans nor maintenance grants and associated welfare benefits such as allowances for dependants.²² State support for postgraduates is limited. Table 2.2 gives details.

As will be evident from Table 2.2, there is a huge disparity between the number of postgraduate students and the number of available awards. State awards for research students in Great Britain increased in number by 44% between 1987/88 and 2005/06 but taught awards offered by the research councils halved over the same period (DIUS, 2008a, table 5.11) and the number of higher degree students more than doubled (see Figure 2.2). Some of the shortfall is made up by other sources of funding. These include sponsorship by industry, charities or the public sector and awards which HEIs themselves offer to attract students. Such awards are usually limited to research students often being associated with a particular research grant, especially in the sciences. Nevertheless, over 40% of home and EU research students have no support for payment of tuition fees (Sastry, 2004a), although the prevalence of self-funding varies by subject (Roberts, 2002).²³ A study of PhD completion rates in the UK found a significant association between sponsorship and timely completion (HEFCE, 2005b). Aside from those taking the PGCE, most full-time taught students have no sponsorship. Part-time students are even more likely to be paying for themselves, although about one in five are sponsored by an employer.

Sastry (2004a, b) reports a slight decline in the number of new home full-time research students across the period 1995/96 to 2002/03,²⁴ despite an increase in the number of first- and upper-second class honours degrees awarded over the same period (comprising the notional pool). This apparent stagnation in PhD recruitment was accompanied by allegations of a decline in the quality of those recruited. Together these concerns prompted the Government to request Sir Gareth Roberts to undertake a review of

²² Some of the benefits provided for disabled students are available for postgraduates also.

²³ In a few subjects there may be more awards available than suitable candidates (Iain Cameron, RCUK, personal communication).

²⁴ There has been a small growth in the number of PhDs *awarded* to home students however, suggesting improvement in completion rates for doctoral study.

labour supply in science, engineering and technology (Roberts, 2002). A major conclusion of his report was that PhD recruitment difficulties were real and were likely to be based on financial cost/benefit decision making by potential doctoral students who found the level of PhD stipend (and possibly academic salaries) unattractive in comparison to the remuneration available in paid employment. As a result of the report the Research Councils introduced enhanced stipends, worth at least £12,000 gross per annum in 2005/06, the level being close to that of the average graduate starting salary after tax. It is perhaps too soon to determine whether this has increased the quantity and quality of PhD students in areas suffering from recruitment problems. Looking at a slightly different period to Sastry, Artess *et al* (2008) and HEFCE (2009b) did find modest growth in UK-domiciled doctoral registrations in the period 1996/97 to 2005/06, but this 10% increase was well below the rate of growth for masters degrees across these years.

Another factor mentioned in the review was graduate debt. There has been a well-documented increase in levels of indebtedness incurred by those undertaking a first degree coinciding with changes to the funding arrangements for full-time first degree study in the UK. Maintenance grants were frozen in 1990 and student loans phased-in, with loans replacing grants entirely in 1998. A means-tested annual tuition fee of £1,000 was introduced in the same year in response to the Dearing Report of 1997. The Higher Education Act of 2004 made provision for re-introduction of means-tested grants but also allowed an increase in tuition fees to a maximum of £3,000 (again means-tested). The combination of student loans with more traditional forms of student borrowing such as bank overdrafts and credit cards have led to average debt levels on graduation increasing by 350% between 1996 and 2003 to £8,700 (Centre for Higher Education Research and Information and London South Bank University, 2005) although an estimate for 2005 put mean debt slightly lower at £8,000 (Callender and Wilkinson, 2007). A much larger proportion of students now work during term-time, presumably as a result of these

changes. Whilst there is no direct and conclusive evidence that concern about extant debt is a disincentive to postgraduate study, Roberts and others such as the National Postgraduate Committee (Darwen *et al*, 2002) have suggested that this is in fact the case. However such a pattern has not necessarily been borne out internationally where similar funding regimes are in place (Langlands, 2005).

Entry to postgraduate study therefore represents a substantial financial commitment (or ‘investment’) on someone’s part, most frequently graduate students themselves. This has not prevented huge expansion in postgraduate studies in the UK but it does signal that financial considerations could represent a barrier to students from certain backgrounds. Whether this is the case is an empirical question, the answer to which has important implications for sociological theories about education, social mobility and social reproduction. This will be developed in the next chapter.

Conclusion

This chapter has set out in detail the historical and contemporary context in which UK postgraduate study is situated. Growth in postgraduate study represents the second wave of an extraordinary growth in the prominence of universities, demonstrated through huge and sustained increases in higher education participation and massive public investment across the last century. The key relationships which underpinned the medieval university – with the church and the aristocracy – have withered away as those groups themselves have seen their influence wane. Concurrent shifts in the class structure of industrialised western states have seen university degrees dominated by the children of the professional classes whilst at the same time providing a pathway for entry into those classes. Over the last 150 years the social basis of recruitment to universities has however widened considerably, particularly for women, ethnic and religious minorities. Whilst absolute rates of participation for those

from lower social class positions have improved, the position of such disadvantaged groups relative to the service class has remained stubbornly consistent.

Postgraduate study in the UK did not commence in earnest until after the First World War; it is essentially a twentieth century phenomenon. Postgraduate numbers saw rapid growth in the 1960s and very rapid growth during the 1990s, alongside the emergence of new institutions such as the polytechnics and a relative shift to postgraduate activity in many established universities. Although the postgraduate initial participation rate today hovers around 8%, numbers are large and growing. Postgraduate study today is complex, with a wide range of disparate qualifications taken by people with different intended outcomes at different stages of their career. There are also large numbers of students from other countries studying at postgraduate level in the UK. Postgraduate complexity is further reflected in the funding arrangements for individuals: these are less uniform than those for first degree study. They are also much less numerous, with very little direct public support available for students.

Contemporary debate highlights the deterrent effect which debt incurred as an undergraduate may have on progression to postgraduate study. Discussion centres on the extent to which postgraduate qualifications can be considered as scarce and desirable goods, likely to assist their holders in securing an advantage in the labour market; the position is somewhat ambiguous. Many postgraduates are already in the labour market and use taught postgraduate qualifications as a means of changing career or enhancing their knowledge, skills and hence prospects in their existing profession. Some postgraduates are taking qualifications required for entry to a particular career; some are seeking to enhance their general level of qualification or indulging a personal interest. Recent growth appears to have been in taught programmes, particularly masters degrees, with entry to research degree study at steady-state (Artess *et al*, 2009; Sastry, 2004a, b). This diversity makes the

assessment of the impact of labour market conditions and student funding regimes on entry to postgraduate study quite difficult.

As the next chapter will make plain, potential inequalities in access to postgraduate study are under-researched, especially where social class is concerned. In contrast, there is a wealth of empirical research on educational inequalities at earlier stages in the educational system which considers the link between unequal educational outcomes, social mobility and social stratification. Determining whether social class inequalities persist to postgraduate level will represent a novel and illuminating development of the existing literature. It will also make an interesting test case for two of the key sociological theories about the mechanisms by which class inequalities in educational transitions are manifested. These theories will be reviewed in the next chapter, which begins by establishing the link between social class and educational outcomes in the UK.

3 Understanding the relationship between social class and education

Introduction

This chapter reviews the relevant sociological theories and evidence about social class inequalities in education in the context of massive expansion of educational provision at all levels. It considers the implications of existing theoretical and empirical work in these areas for an understanding of the relationship between social class and access to postgraduate study. The previous two chapters showed that class inequalities in education are a key concern of those seeking to promote social mobility and social justice. These inequalities have also attracted a good deal of sociological attention. Similarly the huge growth of formal education in the last 150 years, including the ‘massification’ of higher education, has been the subject of political and sociological debate. I will consider the patterns which sociologists have identified in class inequalities in education which will serve as a guide to the interpretation of patterns of participation in postgraduate study by social class presented in subsequent chapters. I will also summarise some of the most prominent explanations proposed by sociologists to account for the processes which give rise to class inequalities. Entry to postgraduate study by social class in the UK provides an opportunity to evaluate these theories against novel empirical evidence.

The chapter is divided into six main sections. I begin with an exposition of cross-national patterns of the persistence of social class inequalities in education and the forms these have taken, a field of research which has shown an unusual degree of sociological consensus and uncovered broadly consistent patterns across the industrialised world. I then consider how class inequalities in education have been understood and explained, following Boudon’s (1974) distinction between primary and secondary effects, which (crudely-speaking) distinguish between prior educational attainment and non-educational

factors respectively. The fourth section covers the role of institutional forms and ‘tracking’ in patterns of social class inequality. As Tilly (1998) has argued, the reproduction of inequalities has an institutional and organisational dimension; this emerges as an important theme in understanding the relationship between social class and postgraduate study. The final two sections review the limited prior evidence on social class in postgraduate education and also on the benefits conferred by postgraduate study – that is the extent to which a postgraduate qualification carries straightforward extrinsic advantage.

Whilst there is a broad consensus about patterns of inequality, there is less agreement about the processes which give rise to these patterns, both in terms of the relative importance of academic, social and institutional factors and of the classed nature of educational decision-making by individuals. I will show that there is little existing research on social class and postgraduate education but that existing sociological work provides a basis for development in this area, particularly the importance of institutional stratification. At the same time, postgraduate study provides a test ground for evaluating those existing sociological explanations.

Social class and education: persistent inequalities?

Social class inequalities in education are *persistent*, temporally and geographically. Cross-national comparative research shows that the effect of social class on educational attainment is essentially ubiquitous and enduring (Breen, 2005; Breen and Jonsson, 2005; Pfeffer, 2008; Shavit and Blossfeld, 1993). These inequalities are robust to expansion in the system, since improvements in the position of a disadvantaged group at one educational level are typically matched by increasing inequality at the next, as those in more privileged positions act to maintain their advantage through education. In addition to being persistent then, social class inequality is said to be *maximally maintained* since it continues until the

participation rate of the most advantaged social classes approaches saturation point (Raftery and Hout, 1993; Shavit *et al*, 2007).²⁵ For instance, class inequalities in access to secondary education are now negligible in Western nations, following the achievement of universal provision at this level. Post-secondary participation, which is usually non-compulsory, does however exhibit sharp class inequalities, as the evidence in Chapter 1 makes plain.

A further refinement of the persistent inequality thesis sees institutional diversification and ‘tracking’ reintroducing inequalities into universal and near-universal educational sectors, via so-called *effectively maintained* inequality (Lucas, 2001). This is perhaps a restatement of the critique of the 1944 Education Act which so concerned British post-war sociologists of education (e.g. Floud *et al*, 1956; Halsey *et al*, 1980).²⁶ Some recent scholarship on access to higher education and social class highlights these within-level inequalities, manifested across the dimensions of institution (Arum *et al*, 2008; Ayalon *et al*, 2008; Boliver, 2006; Bourdieu, 1988, 1996; Crozier *et al*, 2008; Gerber and Cheung, 2008; Mullen, 2009; Reay *et al*, 2005; Shavit *et al*, 2007; Strathdee, 2009; Wakeling, 2005a) and field of study (Bourdieu, 1988, 1996; Jackson *et al*, 2008; Goyette and Mullen, 2006; van de Werfhorst *et al*, 2003; Wakeling, 2005a).

The ‘persistent inequality’ thesis and its variants suggest social class inequalities will continue at postgraduate level, since research has demonstrated that such inequalities apply at each prior educational stage. Extrapolating from maximally maintained inequality too suggests that social class differences at postgraduate level will tend to increase. As access to undergraduate education is opened up to a wider section of the population, then it is presumably postgraduate education which becomes a mark of educational distinction

²⁵ Sweden is identified as an exception to this general pattern (Erikson and Jonsson, 1996). Breen *et al* (2009, in press) have challenged the persistent inequality thesis, showing declining inequality in six of eight case-study countries. Clancy and Goastellec (2007) also show evidence for declining inequality in access to tertiary education, although this is net of institutional stratification and other ‘horizontal’ differentiation.

²⁶ The Act introduced universal and free secondary education for England and Wales, but also set up different educational tracks (essentially ‘grammar’ and ‘secondary modern’) which varied substantially in their prestige and outcome.

and hence the more sought-after good (in a manner analogous to the earlier shift in emphasis from secondary education to post-secondary study).

This phenomenon has been labelled ‘credential inflation’. Credential inflation theories observe that the level of education of many individuals in the population is beyond that required for them to function in their job. Economists label this ‘overqualification’ and are particularly interested in graduate overqualification, since first degrees are a substantial investment, both for individuals and society and overqualification is inefficient. There is clear evidence that many UK graduates enter jobs which do not require a first degree, with some suggestion that expansion of undergraduate education has made this situation worse (Brynin, 2002; Chevalier and Lindley, 2009). In any case, many ‘graduate’ jobs can be entered with a degree in a wide variety of subjects. Graduate civil engineers and physicians, for instance, may have acquired a body of knowledge and skills directly applicable to a career in those fields, but it is far from evident that a graduate historian entering the civil service or a chemistry graduate becoming a management consultant need the knowledge and skills they developed as undergraduates in order to succeed. Journalism is a case in point: in the relatively recent past, journalism was a career typically entered as a school leaver, beginning with menial tasks and working one’s way up to reporter. Later it became a graduate profession, although rarely were journalists graduates of journalism or media studies degree programmes. Now a postgraduate journalism course is increasingly a prerequisite for entry to the profession. Despite the increased level of education required, it is debatable whether journalistic standards are higher now than in the non-graduate past!²⁷

Collins (1979) asserts that the education system is not (*contra* Parsons and Marx) subservient to the economy, producing individuals with the appropriate skills, knowledge and attitudes for the available occupations (or in the case of graduates, for those that have yet to be invented). Nor do qualifications simply provide a handy ranking of individuals by

²⁷ Schoolteaching is another profession which is making the transition from graduate entry (itself relatively new) to postgraduate. The government announced in 2007 its intention to “make teaching a masters level profession” in England and Wales (DCSF, 2007, p. 10).

ability. Rather education is used as a means of social closure by different groups, with credentials being the currency used to acquire advantage in the labour market. Credential ‘inflation’ occurs as more people seek qualifications in order to access privileged positions; the greater number of people holding qualifications, the lower their value becomes. Access to credentials is historically differentiated by social class, but Collins argues that class differences are *inherent* in the structure of the ‘credential society’. This results in a Weberian rather than Marxian class structure, since

the development of self-conscious and organized groups of workers within particular specialities...makes [class] conflict irreparably multisided, each occupational group against the other, and tends toward increasing fragmentation rather than toward consolidation into two opposing blocs.

(Collins, 1979, p. 72)

A review of the credential inflation theory in the USA in the period 1985 – 1998, concurs with much of Collins’ argument and notes a rapid rise in the award of masters degrees and doctorates (Brown, 2001).

Alison Wolf (2002), another proponent of the credential inflation argument points out that the emphasis on education as an economic panacea by the 1997 Labour government (and indeed governments everywhere) is a chimera. Rather educational expansion and the accompanying ‘academic drift’ (e.g. the preference for A-levels over vocational training) reflect demand-side pressure for the most prestigious qualifications, a demand which is reciprocated by employers.

What is driving the current expansion is far more the correct perception by individuals of where their or their children’s own self-interest lies than any close relationship between overall student numbers, the particular subjects they study, and the requirements of the workplace.

(2002, p. 196).

This flight to prestige is also evident in the currency of degree qualifications from different sorts of institution, as employers, students and their parents look for other forms of differentiation than simply possession of a degree. Echoing the ‘effectively maintained

inequality' thesis, *where* one has studied becomes much more important. The hierarchy of universities which has existed for most of the last century - albeit mostly latently to those outside the sector (Halsey, 1992) - comes into play. The 'tyranny of numbers' (Wolf, 2002) compels such differentiation, as the increase in graduates devalues the 'currency' of the degree. The key implication here is that postgraduate expansion should be considered as part of a broader process of social closure; one would thus expect to find it accompanied by the familiar patterns of social class inequality, including horizontal stratification across institutions and 'tracks'.

There is, however, another recurrent finding within the literature on the sociology of educational transitions which offers an alternative prediction about social class inequalities at postgraduate level. Evidence suggests that the effect of background characteristics, including social class, declines with each successive educational transition (Hansen, 1997; Mare, 1980; Shavit and Blossfeld, 1993). So whilst social class continues to affect each educational transition, its effect is weaker in entry to higher education than in attainment at post-16 examinations, for instance. This appears consistent with the findings of the very limited amount of research undertaken on social class and entry to postgraduate study (see below). Although it seems counter-intuitive, this process *is* compatible with maximally maintained inequality because of the cumulative attrition of students from the lower social classes. In the UK for instance there are fewer working-class students amongst graduates than amongst those taking 16 – 19 qualifications, where there are in turn fewer working-class students than at the end of compulsory education. The largest effect of social class on educational transitions is at GCSE, but the smallest proportion of students from NS-SEC classes 5, 6 and 7 is to be found in higher education (DfES, 2006). If this decline does indeed continue to postgraduate level it should result in class differences in postgraduate participation which are quite small.

A sociological comprehension of these patterns and how they might apply to postgraduate study must articulate the mechanisms by which social class inequalities are manifested. A useful heuristic tool for this purpose is Boudon's (1974) distinction between the 'primary' and 'secondary' effects of social class in educational transitions. Primary effects refer to social class differences in attainment, performance in examinations, tests and so on. Secondary effects are contextual and refer to the different choices made by those from different social class backgrounds at points of educational transition, which may (according to the literature) be conditioned by differing class subcultural value systems or by more material calculations of cost and benefit. I turn first of all to these questions of academic attainment.

The role of prior educational attainment – primary effects

The fact that there is an association between social class and rate of tertiary participation does not necessarily imply that social class is a *direct* causal factor in determining entry to higher education. It may simply be a covariate, hiding another explanation. The most obvious such variable is prior educational achievement. Since entry to a degree typically requires at least two A-level passes or their equivalent and the possession of qualifications such as GCSEs is associated with social class, participation rates may simply reflect differential distribution of required qualifications.²⁸ The empirical evidence in this area is complex and contested and may be affected by changes over time such that patterns applying twenty years ago are no longer extant. Several studies have compared students with identical qualifications from different social classes and suggested that qualifications alone cannot account for differential rates of access. Gilchrist *et al* (2003, p. 79), for

²⁸ Propensity to select different kinds of 'level 3' (i.e. A-level or equivalent) qualifications is related to social class (UCAS, 1999), although this itself may be related to GCSE attainment and ability. In general, students taking A-levels are more likely to gain entry to degree programmes than those taking other qualifications (Shiner and Modood, 2002).

example, report that 92.3% of those from social class I having the minimum HE entry requirements at age 21 had achieved a HE qualification by age 30; the comparable figure for those from social class V is 18.5%. The Robbins Committee produced similar evidence (Ross, 2003b), as did the Nuffield Mobility Study, which despite noting that “for those who survived in school as far as 18...the chances of going to university were similar [across social classes]” also found that the average IQ score for service-class entrants to university was lower than that for working-class entrants (Halsey *et al*, 1980 p.189).

Other studies, some looking at more recent data, suggest to the contrary that social class differences largely disappear once qualifications are controlled. Bekhradnia (2003) for example, argues that disaggregating performance at A-level by points score shows little difference by social class. His data, from the Youth Cohort Study (YCS), suggests only a small advantage in participation rates for those in higher social classes, holding achievement constant (except for the highest-achieving A-level students, where there is none). Gorard’s (2005) analysis of the Welsh case showed cohort participation rates for those with the necessary qualifications for HE entry close to 100% for all social classes; any problem, he concludes, belongs to the schools or before, not to higher education.

Given that there is a large body of research on social class and access to undergraduate education it is perhaps surprising that there are relatively few studies which attempt to isolate the direct effects of potential explanatory variables in a multivariate statistical model. Galindo-Rueda *et al* (2004), again using YCS data, found social class ceased to be a significant predictor of participation once prior educational achievement had been included in the model for 1996, but that it *was* a significant predictor when holding prior qualification constant for 2000 entrants. Gayle *et al* (2002) also used the YCS and showed family social class to be a significant predictor of access to higher education, controlling for prior attainment. However problems with attrition in the later YCS cohort make the results a little inconclusive.

Chowdry *et al* (2008) tracked the entire cohort of English state-school Year 11 pupils from 2001/02 to see whether they entered higher education in 2004/05 or 2005/06. Whilst not quite exhaustive (it omitted independent school pupils and those entering after 2005/06), this nevertheless provides perhaps the most comprehensive study of its kind in the UK. The research found that:

[s]tudents from materially deprived backgrounds are much less likely to participate in higher education at age 18 or 19 compared to students from less deprived backgrounds. However, this socio-economic gap in HE participation does not emerge at the point of entry into higher education. Instead it comes about because poorer pupils do not achieve as highly in secondary school as their more advantaged counterparts. In fact, the socio-economic gap that remains on entry into HE, after allowing for prior attainment, is very small indeed: just 1.0 percentage points for males and 2.1 percentage points for females (between those from the most and least deprived backgrounds).

(Chowdry *et al*, 2008, p. 3).

However the measure of socio-economic background used combined ‘free school meal’ eligibility status from the Annual School Census with imputed data on parental education and family deprivation derived from the 2001 Census, not social class.

A possible reaction to this research is to consider the education system as essentially meritocratic and fair. Saunders (1995) for instance suggested evidence of unequal mobility chances (and related educational inequalities) found in major British studies simply reflects unequal distribution of innate ability and differential effort across social classes, not inequality of opportunity. A lengthy debate ensued in the pages of *Sociology* concerning the technical and conceptual merits of Saunders’ criticisms, which on balance has resulted in their rejection (Breen and Goldthorpe, 2001; Lampard, 1996; Marshall and Swift, 1996; Savage and Egerton, 1997).

An alternative to viewing educational attainment as the unproblematic realisation of genetic inheritance is to recognise the differences in the means available to families in different socio-economic circumstances. Thus some families are better able to mobilise significant resources to support their children’s education. Following Savage *et al* (2005)

we can conceive of these means as capital, assets and resources which can be *accumulated* and *converted* from one form to another in order to gain social and economic advantage. Thus both Bourdieu (capital) and Goldthorpe (resources) discuss the mobilisation of these assets to secure educational credentials which are then in turn converted into labour market advantage (Devine, 2004). Economic assets underpin primary effects since money can buy a better education (independent schooling, private tutors and so on) and it can buy cultural assets which are conducive to educational success (books, theatre trips, educational visits etc). Social assets give access to networks and information about the ‘best’ schools and universities, provide opportunities to acquire particular kinds of work experience and so on. Highly educated parents, who possess cultural resources or capital in the shape of their qualifications, are better placed to pass on their knowledge and experience to their children.

There is ample research evidence confirming this mobilisation of resources in the process of accessing higher education. In respect of cultural resources, de Graaf *et al* (2000) showed parental reading behaviour was a strong independent predictor of filial success in school. Galindo-Rueda *et al* (2004) found, in addition to occupational social class, a significant influence for parental education, particularly mother’s education, on entry to higher education. An older analysis of UCCA²⁹ data showed parents of undergraduates were much more likely than the general population to have tertiary qualifications and that the children of well-qualified parents were much more likely to enter university. This effect was particularly strong where parents held higher degrees: 9% of undergraduates had fathers with a higher degree, compared to 1% of the general population; for mothers the relative disparity was twice the size: 2% of mothers of undergraduates had higher degrees compared to 0.1% of the general population (Rudd, 1987). These findings were re-visited using a multivariate approach which found that

²⁹ The Universities Central Council on Admissions was a forebear, for pre-1992 universities and their associated colleges of higher education, of UCAS.

although there were net effects of both social class and parental education, only the *latter* persisted once school-level qualifications were included in the model (Burnhill *et al*, 1990). The findings were replicated in a US study (van de Werfhorst and Andersen, 2005). Lampard (2007) found a clear link between parental and filial educational attainment which also impacted on social class destination. In an international study of the impact of parental education on access to higher education, Thomas and Quinn (2007) conclude that it has a stronger influence than occupational social class or financial factors.

Studies of the strategies used by middle-class parents show how they investigate in detail schools' ethos, reputation and results and invest time and money if necessary to help their children access the school of choice. As a result, children of middle-class parents are more likely to receive 'good quality' private childcare and attend 'good' schools, including private schools. Such interventions now stretch to university choice³⁰ as parents and pupils are increasingly aware of both implicit and more formal hierarchies of university prestige (see below). At different points in their educational careers, different kinds of capital are mobilised by parents and pupils to smooth the path to a preferred middle-class destination for the child. At earlier points, social and economic capital tend to be more important as parents make use of connections in their locale to identify the 'best' schools, nurseries and so on, to purchase entry to private schooling if required and to provide educational resources (Ball, 2003; Devine, 2004; Power *et al*, 2003). At later points, arguably cultural resources are more important in influencing primary effects as entry to university is a more formalised and less locally-controlled process and of course young people themselves assume more prominence in the process aged eighteen than aged five.

³⁰ A phenomenon understood keenly by higher education admissions officers who have moved from seeing accompanying parents at open and visit days as an oddity, then as an increasing nuisance and finally to laying on special activities for parents, who are now more likely than not to escort their children to campus. For anecdotal examples, see Feldman (2008), Marcus (2008) and Dodd (2007).

Although there are unacknowledged similarities between the approaches of Bourdieu and Goldthorpe (Devine, 2004),³¹ the former's concept of cultural capital is more extensive when it comes to primary effects. Bourdieu (1986) identifies three forms of cultural capital: objectified (the ownership of cultural objects, such as books, artwork, musical instruments etc); institutionalised (e.g. educational credentials) and embodied. It is this last state which is the most distinctive element of Bourdieu's approach: cultural capital is embodied in the 'habitus', which refers to the language, forms of expression, disposition and ways of walking, talking and holding oneself ('bodily hexis') characteristic of different groups and so ingrained through socialisation that it becomes 'unseen' to the subject. Bourdieu argues that students from dominant social classes have access to greater cultural capital than their lower class counterparts and that this is the main currency through which entry to and success within higher education is secured. He shows, through a detailed analysis of examination scripts, students' work, interviews with academic prizewinners, school regimes and even obituaries how classificatory judgements made on individuals throughout their academic careers correspond closely with their social origin, even where they have 'made it' against the odds (Bourdieu, 1996). These judgements are often barely disguised summations of individuals' level of cultural capital and represent a process of 'ordination', seen in the consecration of those who make it into the élite *grandes écoles* in France. Bourdieu contends that the apogee of the French higher education system serves to replicate social divisions through ostensibly 'objective' academic criteria. He labels this 'symbolic violence' – it is an exclusionary practice whereby actions which otherwise would be achieved through 'raw' economic capital or indeed physical violence are instead legitimised through cultural means such that they appear natural, even to those subject to the oppression. Thus Bourdieu's innovation is to examine the very nature of pedagogic

³¹ The two sociologists' theories have diverged latterly, as Goldthorpe has privileged economic factors in his theoretical work (Devine, 2004; Goldthorpe, 2000).

practice, which he sees as class-culturally partisan. It leads, almost inexorably, to the gravitation of students to those places most suited to their habitus and cultural capital.

The common representation of pedagogic action, which reduces it to its technical function, is so powerfully asserted that it is difficult to cast doubt on it in the very cases where the facts most strongly argue against it. [...] But the most troubling case along these lines involves [those] institutions...whose recruitment procedures are so obviously designed to guarantee them students already endowed, through their background, with the dispositions they require that we have to wonder whether, as the Romans used to say, they aren't merely "teaching fish to swim".

(Bourdieu, 1996, p.73)

To summarise, the primary effects literature indicates a significant element of observed social class inequalities in educational transitions, including initial entry to higher education, are explained by differential educational attainment. Although there are conflicting findings from studies of different age, scale and design, the balance of evidence is that the effect of social class is principally felt through inequalities of attainment across classes. Some have argued this reveals a fair system which rewards innate ability and effort, characteristics which are unevenly distributed across social classes: that is, there is inequality of outcome, but not of opportunity. However a substantial body of empirical evidence contends that there is an unequal distribution of capitals, assets and resources across social classes such that some families are better placed to support their children's educational progress (and hence to reproduce their advantage through the conversion of these assets). Bourdieu goes further, arguing that pedagogic practice (and hence the attainment of educational credentials) is not itself a neutral 'black box' but rather favours those with a particular 'habitus' and forms of embodied cultural capital.

What does this mean for attempting to understand access to postgraduate study and social class? It infers that the principal effect of social class will be felt through social class inequalities in tertiary attainment – that is in first-degree results. Furthermore, cultural capital and resources, perhaps particularly parental education, will be most important in influencing primary effects, although economic and social assets may still matter too.

There are some indications for instance that attainment in higher education varies according to financial means. Working class university students are more likely to stay at home to study and less likely to benefit from the ‘holistic’ university experience as a consequence (Cooke *et al*, 2004; Holdsworth, 2006).³² They are more likely to undertake paid work during term-time, with on average an adverse effect on their results (CHERI and London South Bank University, 2005; Cooke *et al*, 2004). These various factors will be considered in the research design outlined in the next chapter.

‘Choice’ in educational transitions - secondary effects

There is a broad consensus among sociologists of education over the evidence on social class and HE participation. There is even some agreement over the causes of social class inequalities in educational attainment (primary effects). In the matter of secondary effects though – that is those processes and factors which influence educational transitions over and above attainment – there are quite clear disagreements, theoretically and to some extent, empirically. Two major theoretical perspectives have been highly influential in this respect, those associated with Goldthorpe and Bourdieu. The former contends that class inequalities in secondary effects can be explained by ‘relative risk aversion’ among the disadvantaged classes whereas the latter identifies lack of cultural capital and the playing out of subcultural scripts through the habitus as the central mechanism. *Choice* looms large: it is not enough to be qualified to continue in education because in the post-compulsory sector, one has also to purposively choose to continue.³³ We should ask of educational choices, following Gambetta (1987): ‘were they pushed or did they jump?’ In a

³² Missing out on structured extra-curricular experiences whilst at university can have real consequences in the labour market as employers increasingly seek out ‘soft’ skills to distinguish between graduate job applicants (Brown and Hesketh, 2004; Brown and Scase, 1994).

³³ The A-level to first-degree transition is increasingly a ‘non-decision’ for certain groups. There may, in a massified higher education system, be a ‘herd’ mentality: Roberts (2007) notes that contemporary first-degree students have been in a numerical majority at each step of the educational ladder up to and including first degrees. Those leaving the system are the minority at each stage. See also the discussion of Reay *et al* (2005) below.

study of transition to A-level, Jackson *et al* (2007) contend that secondary effects reinforce primary effects and may account for up to half of the class differential at this transition. This question of choice will be central in considering social class and postgraduate study: whilst postgraduate study has expanded greatly, it remains a minority pursuit, which implies active choice. Moreover one can choose to enter postgraduate study at many different points and thus it is arguably a qualitatively different choice from that made in earlier transitions.

Goldthorpe's relative risk aversion (RRA) theory (developed with Breen) is a particular instance of his broader support for a 'weak' rational action theory in sociology (Breen and Goldthorpe, 1997; Goldthorpe, 1998, 2000). It proposes that the main influence on secondary effects is a rational cost-benefit decision by families concerning the probability of a child's eventual success in the labour market given a particular starting point, probability of success at the next educational stage and the costs (foregone earnings, fees and maintenance) and benefits (increased earnings and better conditions) entailed. It explicitly assumes that family mobility strategies are primarily intended to prevent *downward* mobility, with upward mobility being a subsidiary aim. This is labelled 'relative risk aversion', a 'general' mobility strategy assumed to be shared across all social groups. However there are also more specific mobility strategies particular to advantaged and disadvantaged groups. Goldthorpe (2000) calls these mobility strategies 'from above' and 'from below'. In the former situation, the rational course of action is to invest heavily in educational success in academic education, since this is the best method for avoiding downward mobility even in the face of mediocre academic performance. A mobility strategy from below however requires the application of limited resources and it is therefore typically more rational to aim for short-range upward mobility only, which might mean investing in vocational rather than academic education or selecting early entry into the labour market, except perhaps in the case of exceptionally strong evidence of academic

achievement. Given identical academic ability, the rational cost-benefit calculative response for those from different backgrounds therefore differs because of the varying level of resources (especially financial resources) that can be mobilised.

Breen and Goldthorpe's theoretical model is mathematically expressed (and so conducive to formalised testing) and parsimonious (it includes only those features considered most salient – namely ability and resources). That it employs assumptions about micro-sociological processes without empirically testing these is not in itself a problem – this is the role of a theory, after all and Goldthorpe (1996) sets out to provide a theory of action to underpin substantive analyses of large scale quantitative datasets. However the theory fails if detailed examination of family mobility strategies and education demonstrate non-‘rational’ class-cultural differences, even if the theory fits the macro-sociological data. Devine (2004), for instance, has shown through detailed qualitative work with middle-class families that upwardly-mobile individuals often came from working-class families which did aspire to upward mobility ‘against the odds’, albeit in some instances if this aspiration was partially conditional on the demonstrated intellectual capacity of children. It also fails if it does not accurately predict patterns of educational progression by social class. Entry to postgraduate study therefore represents an interesting – and novel – test case for the RRA hypothesis.

Goldthorpe does not suggest that families and individuals are overtly rational – or perhaps more accurately *calculating* – in their strategies; rather his version of rational action theory favours ‘weak’ rationality, one which is partly embedded in class-based practice as a kind of ‘shortcut’ rationality (Breen and Goldthorpe, 1997; Goldthorpe, 1998). In this he actually differs little from some of the cultural capital theories discussed below: Bourdieu for example talks of the working class ‘making a virtue out of necessity’ when it comes to education – in other words *positively* rejecting on a cultural basis that which is already denied to them (Bourdieu and Passeron, 1979). The difference between

the two approaches is that Goldthorpe argues only material factors remain in a parsimonious model whereas other theories hold that cultural capital and other factors are important in their own right.

Goldthorpe seeks to formalise educational decision-making to view choice as an essentially rational process. Bourdieu, on the other hand, seeks to problematise the very nature of educational ‘choice’. He argues that the field of higher education is constituted in such a way as to favour those who are best placed, through their social milieu and familial cultural heritage, to profit from it. In the following passage he explains how a student’s social class background affects their relation to their university experience:

Lower-class students, forced to entertain more realistic occupational projections, can never completely...fall for the occasional glamour of studies which remain, for them, essentially an opportunity to be seized of rising in the social hierarchy. Bowing to necessity, they more often know and acknowledge the occupation for which they are preparing and the fact that they are preparing for an occupation. [...U]pper-class students can be satisfied with vague projections because they have never really had to choose to do what they are doing – studenthood being an everyday occurrence in their milieu and even in their own families – whereas lower-class students cannot fail to wonder what they are doing because they are less likely to forget that they might not have been able to do it.

(Bourdieu and Passeron, 1979, pp. 51 and 62 – 3).

These classed ways of experiencing higher education are differently valued within the field itself. The education system is particularly valued by those fractions of the dominant classes most lacking in economic capital. In a massified system, the ‘colonisation’ of education by those richer in economic capital puts a particular pressure on the former group, the intelligentsia, to achieve ever higher qualifications. Today this would lead to a prediction that postgraduate qualifications are favoured above all by those with a background in the professional rather than managerial middle classes.

Bourdieu’s ideas in relation to university entry were developed in a study of post-16 pupils in London (Ball *et al*, 2002a, 2002b; Reay *et al*, 2001, 2005; Reay, Davies and Ball, 2001) where interviews with pupils exposed how and why the application choice process is classed. Students’ habitus influenced how the choice process worked: they

typically opted for institutions perceived as being for ‘people like us’, adopting a strategy which was emotionally and culturally, not simply financially low-risk. Students from different backgrounds made use of different sources of knowledge about higher education. Working class students were more likely to use ‘hot’ knowledge, usually anecdotal and received from a few trusted – but not necessarily well-briefed – informants; they generally had a limited choice ‘horizon’, both geographically and in terms of ‘imagined futures’; and they sought – and received – minimal input from parents or their school/college. Reay *et al* name this ideal-typical group ‘contingent choosers’. Students from more privileged backgrounds, by contrast, were ‘embedded choosers’: they mobilised social capital in their choice process, drew on a broad range of information (including formal sources such as prospectuses and university league tables) and conceived of entry to higher education as part of a natural progression: the decision was *where* and *what* to study at university, not whether to go in the first place.³⁴

Besides Devine’s (2004) study, there have been several empirical tests of both Breen and Goldthorpe’s and Bourdieu’s theories. In the former case, Need and de Jong (2001) found that RRA adequately explained class differentials in access to higher education in the Netherlands, although it did not explain gender inequalities, a finding replicated for Germany by Becker and Hecken (2009). Breen and Yaish (2006) found some support for the theory, although the data analysed was for men only and from the 1970s. Bourdieu’s theory has been tested specifically in respect of cultural capital by *inter alia*, Barone (2006), de Graaf *et al* (2000), Sullivan (2001, 2007), van de Werfhorst and Hofstede (2007) and Wildhagen (2009). These studies suggest cultural capital is manifested in primary effects; in fact van de Werfhorst and Hofstede explicitly compared

³⁴ A particularly strong example of embedded choice is the children of US professors who were are likely to choose research universities and prestigious liberal arts colleges (Siegfried and Getz, 2005).

the two theories, finding that RRA was a more satisfactory explanation for secondary effects in a study of school-track entry in the Netherlands.³⁵

Both theories have been criticised for emphasising constraints over opportunities. Thus Bourdieu has been charged with determinism since the habitus usually appears as the social structure embodied and it is difficult to ascertain how it can account for *resistance*. Moreover the swathes of upward mobility witnessed during the latter half of the twentieth century in Western Europe suggest that many in the working class have successfully negotiated higher education, despite a lack of cultural capital. As Devine (2004) and some of the contributions in Archer *et al* (2003) found, university aspirations are not missing among the working class, which brings into question Goldthorpe's description of 'strategies from below'. Nor indeed are middle-class families always able to prevent downward mobility and academic failure (Devine, 2004) and there are ample cases of 'failure against the odds' (Power *et al*, 2003).

Access to postgraduate study by social class provides an opportunity to compare Goldthorpe's and Bourdieu's theories empirically. The research and analysis presented in later chapters therefore represent a unique empirical test for UK data. This will allow for a confirmation or refutation of Mastekaasa's (2006) findings in Norway (see below) that transition to doctoral study did not conform to the pattern predicted by RRA. Instead it was parental education, rather than occupational social class, which exerted the greatest influence. It will also require a research design which provides some measure of the impact of financial and cultural capital factors in access to postgraduate study, such as family financial means and parental education levels.

³⁵ There is substantial disagreement among sociologists about how the concept of cultural capital can and should be operationalised, in particular whether particular measures such as beaux-arts participation or parental education can be abstracted from a holistic Bourdieusian theoretical framework. Goldthorpe has referred to the two approaches as 'Bourdieu domesticated' and 'Bourdieu wild' (see Goldthorpe 2007 and responses in the same and later issue of *Sociologica*; Lareau and Weininger, 2003; Sullivan, 2001; van de Werfhorst, 2008; Vryonides, 2007; Zimdars *et al*, 2009)

Noting the complexity evident in postgraduate education, as described in Chapter 2, there is a further element which must be considered in understanding the potential relationship between social class and access to postgraduate study. As the effectively maintained inequality hypothesis suggests, it is not just entry to a particular level of education which is important, but what kind of qualification is attempted, in which subject and at which institution. The next section reviews the relationship between social class and different ‘tracks’ in higher education.

Tracking: ‘horizontal’ educational stratification and social class

Studies pointing to ‘horizontal’ differentiation in education (that is in differences within the same overall ‘level’) are not new to the sociology of education. Recently though, there has been fresh interest in such differences and their implications for class-based educational inequalities, with much focus on postsecondary educational inequalities by institution type and field of study (Gerber and Cheung, 2008). Shavit *et al* (2007), in a comparative study of fifteen countries, conclude that institutional diversification tends to reduce overall levels of class inequality in tertiary enrolment, but may increase within-level inequalities.

It is important to consider institutional differences at secondary level too. Whilst most of Britain no longer has an academically-stratified state school system there is a small, but disproportionately important independent sector. State schools are free at the point of use and are rarely academically selective.³⁶ Independent schools typically charge substantial fees and many do select pupils. Although independent schools’ A-level results tend to be better, their domination of entry to the most prestigious universities goes beyond what would be expected on this basis. At Oxford for instance, only 53.0% of new young

³⁶ There remain a few local authorities which retain some grammar schools and the eleven-plus examination.

full-time first degree entrants in 2006/07 were from state schools. Based on entry requirements, subjects studied, geographical factors and the age of entrants, HESA calculated an expected proportion of state entrants as 76.7%. Results for Cambridge and other highly-regarded institutions were similar (HESA, 2008b, table T1a). There is a substantial gap between high-achieving pupils from state and independent schools in accessing 'leading' universities: whereas 45% of independent school pupils gaining the equivalent of grades ABB at A-level went to 'leading' universities in 2001/02, only 26% of those with the same achievement from state schools did so (The Sutton Trust, 2004). Power *et al* (2003) found that girls from private sector schools in their sample were the most likely to obtain postgraduate qualifications.

Shifting into higher education, there is a long-standing tendency for working-class students to be more heavily represented in non-university institutions (Committee on Higher Education, 1963; Egerton and Halsey, 1993; Farrant 1981; Kelsall *et al*, 1972; Ross, 2003b). Again, prior attainment has a strong influence here because of the tougher entry requirements of prestigious institutions. There are very large disparities between institutions in the proportion of students recruited from NS-SEC classes 4, 5, 6 and 7: at Oxford this was as low as 10% in 2006/07; at the University of Wolverhampton 51%. Oxford and Cambridge (12%) were well adrift of their location-adjusted benchmarks of 16.8% and 18.3% respectively. Most of the institutions with over 40% of students from NS-SEC groups 4, 5, 6 and 7 are former polytechnics or colleges of higher education (HESA, 2008b, table T1a).

Research has shown how the application process is 'classed'. The choices of working-class applicants are constrained by financial, geographical and social factors which impel many to consider only a limited range of institutions or just a sole local provider (Archer, 2003; Archer and Leathwood, 2003; Ball *et al*, 2002; Callender and Jackson, 2008; Forsyth and Furlong, 2000; Reay *et al*, 2001, 2005; Reay, David and Ball,

2001). There is also evidence that working-class applicants are disadvantaged in applying to prestigious institutions (Boliver, 2006).

In parallel to institutional differences, there are variations in the distribution of students from different social classes across subjects. Whereas in Education over 30% of students in 1999/2000 were from social classes IIIM, IV and V, in Languages and the Humanities this sank to 20%; only around 12% of students in Medicine, Dentistry and Veterinary Science were from the lower social classes (NAO, 2002). These differences are relatively under-researched, yet they are central to some of the arguments put forward by sociologists about the nature of the relationship between social class and education. Bourdieu (1988) sees both field of study and institution as key signifiers of cultural capital. He remarks on how the selection of field of study varies by social class as a consequence of the prestige of the subject, the extent to which it relies on essentially bourgeois knowledge and indeed the degree to which its assessment practices value 'talent' over application, elucidating a hierarchy of faculties which runs ('lowest' to 'highest'): sciences, arts, law, medicine.³⁷

In addition to the patterns identified above, there is some evidence that social class affects choice of subject and subsequent outcomes in the USA (Goyette and Mullen, 2006; Wolniak *et al*, 2008). Although this has been challenged in respect of the UK (van de Werfhorst *et al*, 2003) and its substantive implications downplayed (Jackson *et al*, 2008), there is evidence that it *does* impact on progression to postgraduate study (Wakeling, 2005a) and that cultural knowledge matters more for entry to arts than science subjects in an elite university (Zimdars *et al*, 2009).

To summarise, whilst disparities in overall rates of entry may be explained in the main by differences in entry qualifications, classed (dis)advantage is rediscovered in differential entry to the most prestigious institutions and to a lesser extent, field of study.

³⁷ Note the uncanny similarity to the higher and lower faculties (and higher and lower doctorates) which were a feature of the medieval university, as outlined in Chapter 2.

This shift can be characterised as a move from ‘vertical’ division, where each successive educational transition (school to sixth form to higher education) becomes progressively more socially exclusive; to more ‘horizontal’ division, not entirely replacing the former, but certainly exhibiting an emphasis on divisions *within* a level, such as between subjects and different types of HEI. We can expect these horizontal differences to play out in entry to postgraduate study, but whether and if so how they do so is a matter for empirical confirmation. Clearly consideration must be given to these factors in the research design.

One possibility is the existence of distinct parallel ‘tracks’ or ‘pathways’ through the education system undercutting the formal equality of institutions and subjects. Reay *et al* (2005) argue that such pathways are built upon ‘institutional habituses’, where each school/college environment is predicated on a set of assumptions and expectations about pupil characteristics, behaviour and progression that become ingrained over time. This habitus is absorbed by pupils and influences their subsequent behaviour. Such institutional habituses link more or less closely with those of higher education institutions. Put simply, Reay *et al* trace a line between privileged backgrounds and old universities and working-class backgrounds and new universities:

there were virtually no middle-class students who were applying to predominantly new universities. A number of middle-class boys [from a school in the sample] routinely end up at new universities, but it is almost always because they have failed to obtain the grades necessary to take up places at more prestigious universities.

(Reay *et al*, 2001, p.868)

In the private-school [interview] transcripts, we might expect perhaps to find rejection of the New Universities as not a place for ‘people like us’. This is not the case. The New Universities are not rejected as possibilities; they do not even enter into consideration. They are inconceivable.

(Ball *et al*, 2002, p. 68)

In the British case we can conceive of a system of pathways in terms of the two ideal-types of upward mobility via schooling proposed by Turner (1960): *contest* mobility,

whereby upward mobility is a fairly open competition without strictly defined or pre-ordained pathways; and *sponsored* mobility, where

elite recruits are chosen by the established elite or their agents, and elite status is *given* on the basis of some criterion of supposed merit and cannot be *taken* by any amount of effort or strategy. Upward mobility is like entry into a private club where each member must be “sponsored” by one or more of the members. Ultimately the members grant or deny upward mobility on the basis of whether they judge the candidate to have those qualities they wish to see in fellow members.

(Turner, 1960, p. 856; original emphasis)

Simplifying somewhat, Turner identifies the American education system as conforming to the contest mobility model and the (former) English system to the model of sponsored mobility. Thus the Eleven Plus exam set those passing it onto a privileged academic track towards university and high-status occupations; attaining such an outcome without attending a grammar school was very difficult. Regarding university entrance, Turner argues that the contest system works by allowing fairly open access to university, but accepting that drop-out rates will be high; in a sponsored system, drop-out rates are very low since students on the privileged track receive greater support (both moral and financial ‘sponsorship’). Halsey *et al*’s (1980) evidence lends support to Turner’s thesis, with their finding that among those ‘surviving’ in the British education system to age 18, the chance of entering university was similar, regardless of social class background. Morgan (1990) revisited Turner’s argument with new data and also supported his arguments. The massive expansion of the English higher education system post-1992, together with changes to student funding arrangements mean this conclusion is perhaps now in question – although it could be that the focus of sponsorship has shifted from the secondary school to a later point in the system, such as the type of university attended. This too can be considered in the analysis.

Research on postgraduate study and social class

As I have shown elsewhere, there is very little evidence on factors affecting access to postgraduate study, either in the UK or abroad (Wakeling, 2003a, 2003b, 2005a, 2009a, 2009b).³⁸ Previous investigations of postgraduate study in the UK have either ignored access (e.g. CVCP *et al*, 1996; HEFCE, 1996) or could not consider it due to lack of suitable data (Artess *et al*, 2008; Pollard *et al*, 2008; Sastry, 2004a). A major review of widening participation research concluded that “[t]here appears to be a significant lack of awareness about widening participation in postgraduate study” (Gorard *et al*, 2006, p. 113).

What little UK research there is does not provide definitive evidence about the effects of social class on postgraduate entry. Robbins reported that postgraduates were *more* likely to have a father in manual work than undergraduates (34% against 25%), a pattern confirmed by a later national study of postgraduates which gave figures of 30% and 25% respectively (Rudd, 1975). Whilst on the face of it this suggested equalisation or better for working-class students – a reversal of the situation at every previous transition point in the education system – the shift was explained with reference to compositional factors: postgraduates were concentrated in subjects with a higher proportion of working-class students. There is a nod to Turner’s sponsored mobility in this interpretation: “by the time they have graduated they [working-class students] are in any case middle-class” (Rudd, 1975, p.39). This evidence is now very old and pre-dates the massive expansion of both undergraduate and postgraduate student numbers.

A few recent studies have, in passing, reported on the social class of higher degree students. Hogarth *et al* (1997) found a higher degree participation rate of 1.8% for Registrar General classes I and II, falling to 0.1% for classes IIIM, IV and V. These figures are a little unsatisfactory because even in nationally representative sample surveys, the

³⁸ See also Bowman (2005), Stuart *et al* (2008).

numbers with higher degrees are very small and thus there is a strong possibility of substantial sampling error if one wishes to investigate further the characteristics of those with higher degrees. Studies using whole cohorts of first degree graduates avoid this problem. HEFCE (2005a) tracked the destinations of all 1995 and 1996 first-degree graduates and found no significant difference in the chance of commencing a higher degree between graduates from the most privileged and unprivileged neighbourhoods. Similarly, 1999 graduates were surveyed in a longitudinal study where multivariate regression analysis showed no social class effect on studying a masters degree, although father's education did have a strong influence (Purcell *et al*, 2005). Subject of study, a graduate father (but not mother), solvency, and a good degree result from an old university were all significantly associated with masters degree study. Finally my own previous research used data from the 1999/2000 First Destinations Survey to look at the social class background of full-time first-degree graduates in England who reported progressing to postgraduate study within six months of graduation. This too showed no difference by social class in overall progression to further study, but did find that those from the higher social classes were more likely to proceed to a *higher degree*, even controlling for degree classification. There were some clear differences between subjects. Social class effects virtually disappeared when controlling for institution however, with old university graduates much more likely to proceed to a higher degree, regardless of social class (evidence perhaps of sponsored mobility). Unfortunately the study did not use multivariate methods and social class information was missing in around two-thirds of cases (Wakeling, 2003b, 2005a).

Other British studies have focussed on progression and entry to postgraduate study at individual institutions. Stuart *et al* (2008) found occupational social class had no significant effect on the postgraduate study plans of graduating cohorts at two post-1992 universities in south east England, although family experience of higher education did show an influence. A study at the University of Oxford found very low representation of

working-class students in the postgraduate student body, with some evidence that the social class profile had narrowed in comparison with undergraduate level. The type of institution attended for the first degree was also an influential factor (Heath and Zimdars, 2003; Zimdars, 2007a).

There are also a few studies from other countries. Some comparative European studies found class differences in the transition to a graduate degree, although parental income was also important, independent of social class (Müller and Karle, 1993, Hansen, 1997). Mastekaasa (2006) shows class impacting on the transition from masters to doctoral study in Norway. Earlier American studies reported no continued effect of social class on progression to study at masters level (Ethington and Smart, 1986; Mare, 1980; Stolzenberg, 1994). Mullen *et al* (2003) replicated this finding using parental socio-economic status and level of education but did note an effect for enrolment on doctoral degrees and professional graduate courses (Mullen *et al*, 2003). Zweigenhaft (1993) found that Harvard graduates who had attended state schools in the US were more likely to enter doctoral study than their peers who had attended private schools. He explained this in Bourdieusian terms by arguing that public school graduates were rich in cultural capital, the advantages of which were better realised in the 'field' of higher education; 'prep school' graduates were richer in social capital which could be exploited in business and commerce. A study of the effect of institutional quality and choice of subject on enrolment in postgraduate study observed that controlling for those two factors, parental income and parental education were positive predictors of enrolment in masters and doctoral degrees; however the effect was quite small (Zhang, 2005). In Australia, a government-sponsored study investigated postgraduate student data for 1993 and 1995 – 1997, finding the proportion of students from low socio-economic backgrounds declined from 15% at undergraduate level to 10% at postgraduate level (Anderson *et al*, 1998). In France, the proportion of working-class students declines among post-*licence* students, although it

remains higher than among the *grandes écoles* (Albouy and Wanecq, 2003; Euriat and Thélot, 1995; MEN and MESR, 2008; Merle, 1996).

In summary then, there are conflicting research findings about social class and postgraduate study. In the UK, the position appears to have moved from there being little apparent connection between social class of origin and entry to postgraduate study conditional on holding a first degree, to a situation where there are possible social class effects, albeit mainly indirect (through institution attended). Elsewhere there is continued social class attrition between undergraduate and postgraduate study, although this is not uniform across subjects and types of qualification. The research presented in this thesis will contribute to understanding further the relationship between social class and entry to postgraduate study. In contrast to previous research, this will involve the use of broader and more comprehensive datasets and consideration of a wider range of confounding factors than has been undertaken before.

What are the benefits of postgraduate study?

Until this point the discussion has assumed there are material benefits to the acquisition of higher education. Is this the case? That there is a link between social class and access to higher education suggests that it is at least *perceived* as a worthwhile good, likely to generate advantages in the labour market. Although the precise ‘lifetime earnings premium’ for graduates was hotly disputed by both politicians and economists in the prelude to the Higher Education Act 2004, it is clear that graduates generally enjoy some financial advantage from their status. Moreover as Wolf (2002) has argued, the fact that most people seeking many kinds of employment have a degree tends to make such a qualification a prerequisite for entry to that career. Such a benefit over and above undergraduate study has yet to be established unequivocally for postgraduate education

and so the apparent lack of direct social class effect on entry to postgraduate study could simply reflect its low value as a good. On the other hand, this situation may be changing rapidly as credential inflation, following the very recent rapid increase in student numbers at all levels, begins to bite. Knowing whether postgraduate study generates extrinsic benefits will help put any social class differences in access in their context.

As noted in Chapter 2, the funding available for postgraduate study is limited. Most students will be faced with meeting their own tuition and maintenance costs. Research suggests that changes to student funding arrangements in the UK have affected those from lower social classes the most, typically because they tend to express greater aversion to debt (Archer, 2003; Callender and Jackson, 2005, 2008; Davies *et al*, 2008; Hutchings, 2003; Pennell and West, 2005). However there is a paradox: avowed debt aversion is not necessarily reflected in actual behaviour as participation rates by social class have remained constant rather than exhibiting a downturn from poorer groups following the introduction of tuition fees. While there appears to be an impact of financial considerations on choice and patterns of study, term-time working etc., this is evidently about *how*, not *whether* to study in the first place.

Specific evidence on postgraduate study is somewhat contradictory. In the 1980s, possession of a PhD had a *negative* impact on earnings for science, technology and social science subjects when contrasted with first class honours graduates in the same cohort, (Dolton *et al*, 1990; Rudd, 1986, 1990). However, returns to higher degree qualifications now exceed those for first degrees although the additional impact is larger for women than men and is relatively insubstantial (Chevalier *et al*, 2001; Dearden *et al*, 2000). The most recent study found heterogeneous outcomes across subjects, with postgraduate study in some offering “substantial earnings premia” whereas in others “there is no additional gain to undertaking a PhD relative to a Masters degree” (O’Leary and Sloane, 2005, p. 85).

Not all benefits are financial. Graduates are less likely to be unemployed, more likely to have high-status jobs, have better physical and mental health than non-graduates and report strong civic engagement, (Bynner and Egerton, 2001; Egerton, 2002). American research generated similar findings, with some, but not all non-economic benefits being enjoyed to a greater extent by those with ‘advanced degrees’ (Perna, 2005). Research into the graduate destinations of PhD qualifiers found an unemployment rate “less than half that of first degree graduates” and that “only 1% are in ‘stop gap’ jobs which bear no relation to the level of their qualifications” (UK Grad Programme, 2004, p. 14).

Potential postgraduates may perceive the benefits of postgraduate study in economic or non-economic terms or both. A study of doctoral students in the humanities suggested most were career-changers seeking intrinsic intellectual fulfilment from the PhD rather than a specific outcome (CUDAH, 2002), a finding replicated, with the addition of ‘professional effectiveness’ as a benefit, among doctoral students in education (Leonard *et al*, 2005) and also reported, more anecdotally, by students in other subjects (UK Grad Programme, 2004). Here postgraduate study resembles an act of consumption or a variety of leisure activity. It is certainly something actively chosen (not being the ‘natural’ next step yet) and may even be seen, in terms of Goldthorpe’s theory, as an *irrational* choice.

Opinion surveys of postgraduates and potential postgraduates find improved career and employment prospects are the principal motivator for further study; some cite personal development as a spur. Some are discouraged from postgraduate study for financial reasons; others are simply tired of studying or want a break before returning (Barber *et al*, 2004; Darwen *et al*, 2002; Donaldson and McNicholas, 2004). There is no evidence on whether such motivations vary by social class background.

Conclusion

I have presented and evaluated a range of theoretical and empirical material on the associations between social class and education. I have also drawn out implications of these theories and findings for a sociological understanding of social class and access to postgraduate study. Social class inequalities in education are persistent and robust to expansion in the system as they spill over into the next level in the educational hierarchy or generate differentiation at the level of institutional ‘track’ and field of study. Class inequalities in educational transitions arise principally from class differences in attainment; sociologists see these ‘primary effects’ as the outcome of the variation in different kinds and amounts of capitals, assets and resources across social classes. The ‘secondary effects’ of class operate through choice-making at transition points and result in lower rates of transition for the disadvantaged which are explained, in the dominant traditions in the sociology of education, through rational relative risk aversion or alternatively as the playing out of subcultural scripts through the ‘habitus’. Consideration of the limited existing evidence on social class and entry to postgraduate study indicates few social class differences in the UK, but some effect elsewhere. This is consistent with the general observation that the effect of social class declines in later educational transitions and may reflect uncertainty about the value of postgraduate study relative to a first degree.

The original research presented in the remainder of this thesis scrutinises the literature discussed here through a detailed analysis of patterns of access to postgraduate study by social class. On the basis of the existing literature, we should expect to see aggregate class inequalities continue to postgraduate level, albeit in a somewhat weaker form. We should also expect to see a prominent role for prior attainment and a horizontal stratification of postgraduate study which will emerge in the articulation of social class, institutional prestige, type of postgraduate qualification and subject discipline. These

extrapolations will be put to the test against the evidence available. Similarly there will also be evaluation, through analysis of factors associated with postgraduate participation, of the sociological theories proposed as explanations of class inequalities in education. According to RRA there should be an association between social class, economic factors and postgraduate study, whereas cultural capital theory would predict educational qualifications and institutional prestige to be salient.

Scrutinising postgraduate study to determine whether these various predictions are correct requires extensive data on postgraduate participation. The next chapter explains how the research design adopted, based around three large datasets about postgraduates, is appropriate for addressing the research objectives set.

4 Data and Method

Introduction

The preceding chapters established the link between social class and educational attainment and situated postgraduate study within this context. Chapter 3 comprised a review of sociological theory and research about the link and considered how examination of social class and postgraduate study could be used to evaluate this body of work. Central themes to be addressed which emerged from the review included the persistence of class inequalities to postgraduate level; whether inequalities were related to primary or secondary effects of social class; the structuring of social class effects by institution, subject discipline and so on; and the influence of social class on the process of educational decision-making. The relative paucity of empirical research on factors affecting access to postgraduate study was also noted.

This chapter outlines a research design to address the knowledge gap and hence answer the research questions set. The design selected is based on statistical analysis of existing large datasets of postgraduate students and first degree graduates in the UK for the academic years 2001/02 – 2004/05 inclusive; and primary data collected from an online survey of postgraduate students in nine English higher education institutions ($n=2,181$) conducted between February and July 2007. I describe the rationale for selection of these data sources, give an overview of the secondary data and the survey design and justify the appropriateness of the design for addressing the research questions.

I first review the availability of secondary data on postgraduate students and those with postgraduate qualifications to assess whether suitable sources already exist for the research. I note that the characteristics of these two populations make the use of large governmental social surveys problematic. The level of detail held in such surveys is

typically insufficient to cope with the complexity of the analysis required; and furthermore sample sizes of those with postgraduate qualifications are usually such that very large sampling errors and non-coverage would be introduced. Data collated from institutional administrative systems for statutory statistical returns to HESA are preferred as a uniquely broad and deep source on postgraduate students and those progressing immediately from a first degree to postgraduate study. They are not without limitation though: the datasets and their drawbacks are discussed.

I move from identification of what is missing from the secondary datasets – particularly the absence of data on socio-economic characteristics of postgraduates – to an outline of the case for primary data collection. The reasons for selecting an online survey are discussed, as is operationalisation of key concepts, particularly measurement of social class. A description of the survey through its pre-pilot, pilot and main stages is provided, with further detail included in a range of appendices.

I conclude with a critical reflection on the methods selected, including the use of an online survey. Web-based surveys have only a short history in social science research and come with advantages and disadvantages: some are shared with other self-completion surveys; others are unique to the electronic medium. I address these explicitly with reference to the developing methodological literature in this area and with a particular focus on response rates, in view of the generally low response rate to my survey. I conclude that although there are difficulties with the survey, it should be seen as part of a strategy of data triangulation: appropriate techniques will be adopted in the analysis to help mitigate shortcomings from nonresponse and missing data. I will go on to describe these techniques in detail in Chapter 5. The research design as a whole can be situated in the comparative case-study tradition in the sociology of education and social mobility which strikes a balance between case-oriented and variable-oriented research.

Secondary data: problems and possibilities

Operationally, there are several potential ways to address the question of the relationship between social class origin and postgraduate study and the factors associated with the presence – or absence – of this relationship. However as I am interested in this relationship across the UK, that implies using some form of quantitative survey- or census-based method. In-depth qualitative research is appropriate if aiming to explain the *processes* which lead (or do not lead) to social class differentials in access to postgraduate study, but that is of subsidiary concern here. Such an approach would not allow the identification of overall trends and even with careful selection of cases the results for a few individuals would be difficult to generalise. Instead, the social class background of the population of those who are undertaking or have undertaken postgraduate study must be established, as well as that of the appropriate comparator population, effectively those people who are qualified to enter postgraduate study.³⁹

In this section I will review existing large-scale data sources on postgraduate students and explain why HESA datasets were preferred. Social scientists investigating patterns of access to undergraduate study by social class have often achieved an approximation to their population of interest through secondary analysis of such datasets. A number of large government surveys, such as the General Household Survey and the Labour Force Survey collect detailed information about respondents' educational background and are designed to be 'aggregated up' to give whole-population estimates. However whilst sample sizes are large (over 30,000 for the GHS in 2005 and over 123,000 for the LFS in 2007), the proportion of respondents with a postgraduate qualification is typically low (around one in fifty for both surveys). Since the population of those with a postgraduate qualification is relatively small, a sample survey of the general population is

³⁹ Since possession of a first-degree is usually a prerequisite for postgraduate study it is inappropriate simply to compare postgraduates with the general population.

likely to give an unacceptably high sampling error.⁴⁰ Further noise is introduced by cohort effects, as higher degrees awarded in different decades were obtained in very different circumstances: in the Q4 2005 LFS the year in which a doctorate or masters was obtained ranged from 1939 to 2005, with one-third obtained before 1990 and two-thirds before 1999. Moreover, 50% of those reporting a highest qualification of doctorate obtained in 2003 or 2004 were women. HESA figures for the equivalent period showed that 42% of doctorates were awarded to women (HESA, 2004, 2005). Add one more confounding variables known to be an important source of variance in statistical analyses of higher education participation (such as subject of study) and it becomes clear that these sample surveys are inadequate for addressing the research question as cell sizes will quickly become too small and ‘sampling zeros’ may be evident. Moreover, only the GHS, with its smaller sample size,⁴¹ includes the information on natal social class or parental level of education necessary for assessing whether there is indeed a social class differential in obtaining a postgraduate qualification. Census data cannot be used either. The 2001 Sample of Anonymised Records (SARs) represents a 3% sample (Individual Licensed SAR) of microdata from the UK Population Census for 2001, around 1.8 million cases, but does not distinguish between holders of first and higher degrees, as it aggregates those with qualifications at NVQ levels 4 and 5.

Panel-based cohort studies are another potential data source. There are three relevant UK studies, following individuals born in 1958 (the National Child Development Study); 1970 (the British Cohort Study) and 2000 (the Millennium Cohort Study). The latter is clearly unsuitable since the panel members are too young whereas NCDS cohort members would be entering higher education from 1976 and thus into postgraduate study from 1979, long before the upsurge in higher degrees. The 1970 BCS is more promising:

⁴⁰ Unless this small population is over-sampled. This is not part of the design for government surveys (and would actually be difficult to do *ex ante*).

⁴¹ GHS samples could be combined across years to increase the population of those with postgraduate qualifications, but this is still unlikely to yield sufficient cases.

panel members will have entered higher education from 1988 onwards, with a not insubstantial proportion entering as mature students (as measured in the 1999/2000 wave). With detailed information about their (natal) family background available from the earlier waves of the study it is feasible therefore to investigate whether parental social class at birth or (say) age 16 predicts later progression to postgraduate study (although the fact that less than 3% of the surviving members of the study had done so by 1999/2000 suggests there will again be substantial sampling errors, especially if subject and institution attended are theoretically important explanatory variables). Further weaknesses are panel attrition, which had reached 44% by 2004/05 (Simmonds *et al*, 2007, pp. 5 and 34); and the fact that panel members were all born in the month of April, which will almost certainly have affected their rate of progression into higher education, because children born near the start of the school year (September) have higher initial participation rates than those born later on (HEFCE, 2005a).

Some studies of differential rates of entry to undergraduate study used application data (e.g. Bolliver 2006; Shiner and Modood, 2002; Zimdars, 2007b). This has the advantage of countering the common criticism of widening participation research that insufficient attention is paid to non-participants (Gorard, 2005; Gorard and Smith, 2006) or in this case those who attempted but failed to gain admittance to a degree programme.⁴² The UK has a national application system for full-time undergraduate courses, run by UCAS. No such facility exists for postgraduate applicants.⁴³ Capturing additional socio-demographic background variables for postgraduate applicants to one or several higher education institutions would be one way to supplement the large amount of information already collected about applicants to investigate differential rates of application and entry to postgraduate programmes by social class. This was discounted on practical grounds: it

⁴² As distinct from those who did not apply in the first place, despite being qualified in principle.

⁴³ UCAS launched 'UKPASS' (UK Postgraduate Applications and Statistical Service) in November 2007. It covered only a handful of institutions initially. UCAS does handle applications to a small number of postgraduate courses through the main scheme (social work and nursing) and also processes applications for postgraduate initial teacher training (PGCE) through the Graduate Teacher Training Registry.

would involve an extended data collection period (commencing at the beginning of an academic cycle and concluding up to fifteen months later once students had enrolled) and would require considerable training of institutional admissions staff as well as additional work in recording the data required for the study for each applicant. My personal experience working in higher education administration suggested that it would be very difficult to achieve buy-in to such a design from higher education institutions.

Much more promising data sources are those based on statistical returns to HESA which effectively represent a census of all students in all publicly-funded UK higher education institutions, plus a survey with approximately 80% population coverage of those completing a higher education qualification in the previous year. Institutions are contractually obliged to provide HESA with electronic microdata on students and qualifiers, annually in a common format. This comprises over 200 items for each student ‘instance’,⁴⁴ covering information on the institution, the student, the course, prior qualifications and so on. It represents a uniquely rich resource for understanding the composition of the UK’s student population, including its postgraduates. Unfortunately, although it is possible for institutions to record the occupational social class background of each postgraduate student, this information is not mandatory and is rarely collected. The HESA student record itself then is a rich resource for providing necessary *context* on the courses taken by postgraduates and some of their socio-demographic characteristics (age, gender, ethnicity etc). It has been used by a number of previous studies (including Connor *et al*, 2004; HEFCE, 2005a; Leslie, 2005; Pollard *et al*, 2008; Wakeling, 2005a, 2007a, 2009a) although it is undoubtedly underused by higher education researchers.

HESA data is administrative in nature and as such comes with a range of potential issues related to quality, conceptualisation, validity and so on (Hakim, 2000; Hindess, 1973; Judson and Popoff, 2005). There is a long history of research using – and vehement

⁴⁴ A student can be returned more than once to HESA in a given year provided she is registered for more than one qualification.

disagreement about – administrative data in social science research. I have discussed this in detail in relation to HESA data elsewhere (Wakeling, 2003b). Here it is sufficient to state that despite its drawbacks it is difficult to conceive of a more comprehensive dataset which could be acquired within the confines of this doctoral research project; and to note recent arguments that sociologists must increasingly utilise alternative ‘transactional’ sources of data other than those collected through traditional sample surveys and in-depth interviews (Savage and Burrows, 2007).

However the HESA student record cannot alone provide answers for this study’s main research question. Moreover even if social class were an available variable in this dataset it would still be insufficient on its own for addressing the research question – or at least not without very careful dissection. Postgraduate students cover a wide age range, with some having completed their undergraduate study the previous year whereas others are graduates of long-standing returning to postgraduate study after time in the labour market or other activity. Some are continuing students taking a research degree part-time over six years; others are new entrants taking a one-year full-time masters degree. These differences mean that a simple analysis of the social class background of postgraduate students could easily confuse actual with artefactual effects. Even more importantly, to establish whether or not there is a social class differential in access to postgraduate study, a clear idea is needed of the ‘base’ population of those qualified in principle to progress to postgraduate study. Without such a comparison, any study is open to the criticism that either (i) non-participants are not systematically different to participants (i.e. there is no differential); or (ii) non-participants differ in a systematic *but not unfair* manner from participants, such as academic ability (Gorard, 2005; Gorard & Smith, 2006).

To address this potential criticism I also use HESA data on first-degree qualifiers, because they comprise the population of those qualified for postgraduate study.⁴⁵ When a student successfully completes a higher education qualification in a publicly-funded UK higher education institution they become part of the Destination of Leavers from Higher Education (DLHE) population. Each student is contacted by their institution approximately six to twelve months following completion of their course and is asked about their ‘activity’ at that point to ascertain whether they are in employment, further study, seeking employment or doing something else. Data is collected about the nature of employment or further study. It is possible to link data collected via DLHE to the more extensive data on the student and their course held as part of the HESA student record.⁴⁶ This includes all of the fields available for postgraduate students, but crucially also the occupational background of the student, since that field is compulsory for full-time undergraduates entering via UCAS (comprising a large majority of full-time undergraduates). It is thus possible to compare the social class background and other characteristics of students who do and do not progress to postgraduate study as their ‘first destination’.

The postgraduate student dataset contains approximately 330,000 postgraduate students for each of the academic years 2001/02 – 2004/05; in the destinations dataset there are over 200,000 graduates each year, around 80% of whom responded to the DLHE survey. A detailed description of the HESA datasets is included in Appendix 1.

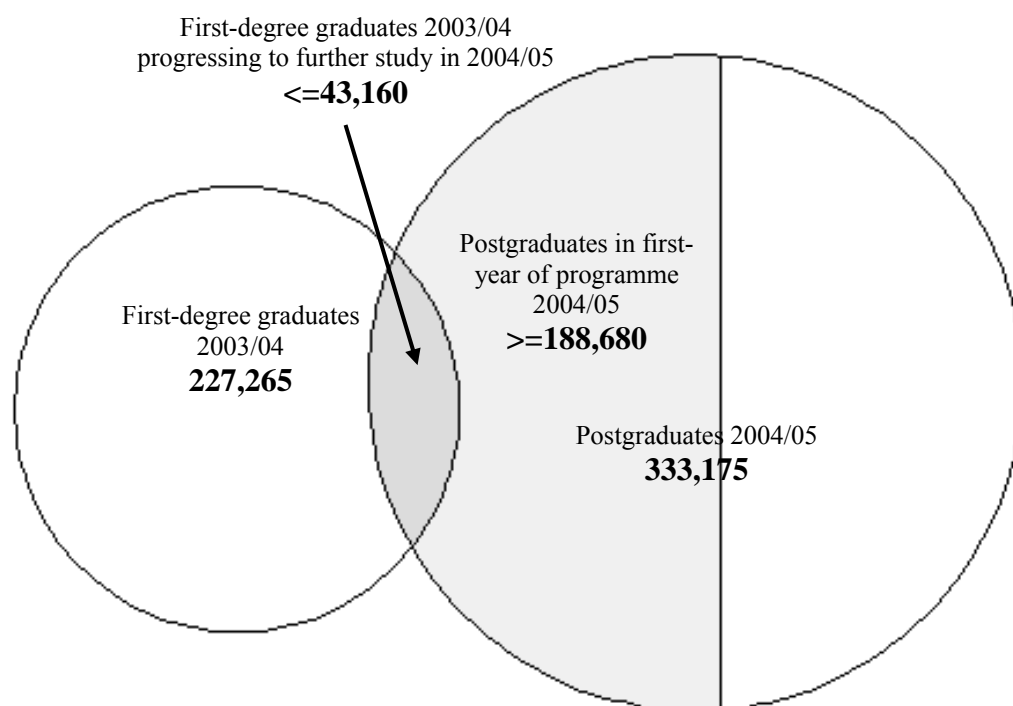
Besides the question of nonresponse and missing values (analysed in detail in Chapter 5), the main shortcoming of using qualifier data is that most postgraduates have not progressed immediately from a first degree. Although at least 43,000 first-degree qualifiers from 2003/04 reported a first destination of ‘further study’ or ‘work and further

⁴⁵ A first degree is not always a prerequisite for entry to a postgraduate course. Sometimes institutions admit those with work or other experience deemed ‘equivalent’ to a first-degree or with other undergraduate qualifications such as registration as a nurse, HNDs etc. HESA data for 2004/05 indicates 15% of UK-domiciled postgraduates had a highest qualification below that of first-degree or equivalent; however only 6% had no prior higher education experience and the level of prior qualification differs by subject and level.

⁴⁶ I am indebted to John Thompson of HEFCE who first suggested this possibility.

study', there were nearly 189,000 postgraduates in their first year of study in 2004/05 (see Figure 4.1).⁴⁷ Clearly, focussing only on access to postgraduate study for first degree graduates in a given year will omit the majority of postgraduate students the following year. Any apparent social class differences then may simply result from *delayed* rather than blocked entry to postgraduate study by one or other group. If it were found that students from certain classes delay their entry to postgraduate study this would be substantively interesting, but it is a different phenomenon from those students not entering further study at all.

Figure 4.1: Venn diagram of HESA datasets showing the relationship between first-degree graduates 2003/04^a and postgraduate students^b 2004/05



^a Numbers appearing as postgraduates in the subsequent year's student record may be lower due to graduates taking courses not taught in UK higher education institutions, taking a second first degree etc.

^b First year numbers may be slightly higher: 30,580 postgraduates were missing 'year of programme of study' information.

⁴⁷ According to HEFCE (2009b, table 30), only about one-third of full-time, UK-domiciled PhD starters in 2004/05 had completed a UK first degree in 2003/04. About one-third of full-time PhD entrants had previously completed a masters degree (up from one-fifth in 1996/97) (HEFCE, 2009b, table 33).

Table 4.1: Characteristics of first-degree graduates 2003/04 who progressed to postgraduate study as their 'first destination' and postgraduate students 2004/05

Characteristic	First degree graduates 2003/04	Postgraduates 2004/05
Female	0.563	0.575
Full-time	0.693	0.335
Research student	0.139	0.155
Taught masters student	0.471	0.446
Mean age	23.5	33.8
White	0.871	0.870
<i>Subjects</i>		
Medicine & Dentistry	0.006	0.034
Subjects Allied to Medicine	0.034	0.104
Biological Sciences	0.146	0.054
Agriculture and Veterinary Science	0.008	0.006
Physical Sciences	0.093	0.033
Mathematical and Computing Sciences	0.082	0.042
Engineering	0.045	0.038
Technology	0.006	0.010
Architecture, Building & Planning	0.014	0.027
Social Studies	0.101	0.072
Law	0.069	0.042
Business & Administrative Studies	0.057	0.158
Mass Communications & Documentation	0.013	0.016
Linguistics, Classics & related subjects	0.078	0.018
European Languages, Literature & related subjects	0.026	0.004
Eastern, Asiatic, African, American & Australasian Languages, Literature & related subjects	0.008	0.002
Historical & Philosophical Studies	0.093	0.033
Creative Arts & Design	0.085	0.028
Education	0.029	0.272
Combined	0.006	0.007

Sources: DLHE 2003/04; HESA Student Record 2003/04 – 2004/05

HESA data provide a good source of contextual information about all current postgraduate students and fairly comprehensive coverage of the characteristics, including social class background, of first degree graduates progressing immediately to postgraduate study. A gap remains in relation to the social class background of *current* postgraduates. In the absence of longitudinal data on first-degree graduates' destinations,⁴⁸ using HESA data

⁴⁸ HESA have begun a longitudinal version of the DLHE survey, the first results from which were published in November 2007, outside the timescale for procurement of data for the thesis. A study by Purcell *et al*

alone I could not ascertain whether the social class background of postgraduate students not progressing immediately to postgraduate study (who comprise the majority, as shown in Figure 4.1) differed materially from those whose undergraduate to postgraduate transition was contiguous. There is no prior research evidence in this area, but a very rudimentary consideration of the differences between the ‘contiguous’ and ‘non-contiguous’ postgraduates strongly implies that different social class backgrounds are likely (see Table 4.1). This was indeed the case, as is demonstrated in Chapter 8.

It was therefore necessary to augment data on current postgraduates by undertaking primary data collection via a survey.⁴⁹ The aim was to establish the occupational social class background of current postgraduate students and to collect data on other dimensions of social class background, such as parental education and the student’s own occupational history. These additional data, together with the secondary data outlined above, provide a picture of the social class background of postgraduates which, whilst not wholly complete, both advances existing knowledge and is adequate for answering the main research questions. It is to the construction and conduct of the online survey which I now turn.

Primary data collection: the online survey

This section describes the online survey conducted as the substantial fieldwork element of the research, with the principal aim of collecting data on the socio-economic background characteristics of current postgraduates, data that is not available elsewhere. It was a complex and often technical endeavour; the emphasis here is on providing a broad summary of the rationale for the survey and key design features, the main decisions made

(2005) tracked a sample of 1999 graduates over a period of five years; however the data from this research has yet to be made available via the UK Data Archive.

⁴⁹ Henceforth I will refer to the three datasets as follows. The data for 2001/02 – 2004/05 on postgraduate students will be the ‘postgraduate student dataset’. The data from the FDS and DLHE for 2001/02 – 2004/05 will be the ‘destinations dataset’. The data collected via my online survey of postgraduates will be ‘the online survey dataset’.

regarding its implementation (including operationalisation of the key variable – social class) and an overview of response rates. Full technical details, including a copy of the instrument for the main survey and descriptions of survey software, experimental testing of pilot versions, characteristics of participating institutions and their recruitment and issues encountered for individual institutions are set out in Appendices 2 to 5 respectively. Chapter 5 provides a full description of the achieved sample, including an analysis of patterns of nonresponse.

The survey of postgraduate students was conducted in nine English higher education institutions during the period February to July 2007. There were 2,388 responses in total, with institution totals ranging from a low of 12 to a high of 545. A total of 207 responses were deemed ineligible on grounds of nationality (201) or duplication (6), giving 2,181 valid responses. Net response rates varied from 6% to 19% by institution. One small specialist institution provided only ten valid responses at a response rate of 10% and hence is disregarded in the analyses presented.

The survey's target population was defined as all actively-studying UK-domiciled postgraduate students at each participating institution. Actively-studying students were selected because the postgraduate population can sometimes be held to include students who have suspended their study for one reason or another and those who are writing up a thesis. Including them would tend to skew results to over-represent doctoral students and those in the later stages of their programmes. The survey was limited to UK-domiciled students as this is the usual approximation to 'home' students, meaning those who are ordinarily resident in the UK. If the principal variable of interest is social class, inclusion of students from other countries prevents like-for-like comparison with other research and official statistics (including those on undergraduate participation by social class) and will confound the operationalisation of social class. As the class structures in non-UK students' home countries will be different, any overall picture of social class background could be

heavily skewed by the large numbers of students from particular countries (e.g. China, India). Furthermore, internationally mobile students are more likely to be from higher social class backgrounds in their own countries (Lowe, 2007; Munk, 2009).

There is no sampling frame containing contact details for all postgraduates in the UK so a simple random sample of current postgraduates is not possible. However estimating a simple overall figure for the social class background of postgraduates is not necessarily helpful. As shown in Chapter 3, it is well known that there is substantial variation in the social class background of students at undergraduate level according to subject of study and institution; these differences are lost in any overall social class distribution. Moreover different postgraduate qualifications lead to different labour market outcomes. This and other sources of heterogeneity in the postgraduate student body identified by Sastry (2004a) could also be lost if using a simple random sample.

The design implemented for the survey employs the best available sampling frame for the population: institutional student records. Since postgraduate students are based in institutions and those institutions must contact their students on a regular basis, such records represent a 'least-worst' sampling frame. Alternative approaches would rely on opportunity sampling, such as distributing paper questionnaires in places which postgraduate students frequent, posting messages on online message boards and so on – with all the attendant problems of large non-sampling error, nonresponse bias and potential for ballot-stuffing. In using institutional records, the survey is very similar to the design used by Rudd (1975) in his survey of postgraduate students in British universities carried out in the 1960s with the exception being the questionnaire mode (online self-completion, not in-person interviews and a postal survey).

The survey design was two-stage: for practical reasons not all UK higher education institutions could be included in the research. An upper limit of ten institutions was established as manageable for a lone researcher based on the work involved in customising

the survey instrument for each participating institution, data coding and cleansing and provision of a report on the results (promised as an inducement to participate). Less than five institutions would give insufficient variation in institutional size, location, subject profile and prestige. A total of nine institutions were included in the final study.⁵⁰ One of these institutions piloted the survey, with the outcome good enough for inclusion in the main analysis. A range of institutional types was achieved, covering small colleges, large universities, 'new' and 'old' universities. Some geographical spread was attained: although unfortunately only English institutions were recruited, these cover six of the nine English regions. No institution in the sample was founded before 1800. Details of the process for recruiting institutional participants is given in Appendix 5. Since the cluster sampling stage was purposive rather than random it is not possible to specify confidence intervals for population estimates (e.g. for the UK or England) calculated from the achieved sample; rather the institutional sample is designed to ensure variation across the main axes of difference in student demographics (institution type, subject, qualification type, region). The resulting data thus give, in a sense, a set of quantitative case studies rather than data which can be *formally* statistically generalised to the population of all UK-domiciled postgraduates.

An online questionnaire-based survey was selected as the most suitable medium for collection of data for several reasons. Firstly, some form of standardised survey instrument was required since to establish the socio-demographic characteristics of the population of postgraduate students, closed questions would be most appropriate (de Vaus, 2002). A questionnaire is typically of two forms – an interviewer-administered instrument, where respondents are questioned face-to-face; or a self-completion questionnaire of some description. The former was dismissed on logistical grounds because as a lone researcher it would not be possible to carry this out on a large scale, especially across multiple sites.

⁵⁰ Coincidentally, this is the same number of institutions in Rudd's (1975) study.

That left a choice between a paper-based self-completion questionnaire and an online questionnaire accessed via the world-wide web. The latter was preferred, chiefly on grounds of cost and time savings: printing and posting several thousand questionnaires would be difficult to resource, particularly given the imperative to issue reminders to non-respondents to improve response rates (Dillman, 2007) and data entry of completed questionnaires would also be an exceptionally lengthy process.⁵¹ In contrast, an online survey is typically much cheaper as there are no printing and posting costs and data are captured at the point of response. It is also possible to validate entries and to force response to certain questions and, in some software packages, to monitor response from individuals in the sample, prevent multiple responses and route respondents through the questionnaire conditional on their answers to earlier questions (Couper, 2000). In my case, the availability of software licences for creating and managing online questionnaires meant the cash cost was practically zero. There are examples of prior research projects with postgraduate students which have successfully employed an online survey (Getka-Wilczyńska, 2003; OST, 1999, 2000). It was the method selected for a large Higher Education Academy project entitled the ‘Postgraduate Research Experience Survey’, which also ran during 2007 and looked at the quality of research degrees in the UK. More generally, online survey methods are increasingly commonplace and seen as possessing several advantages over traditional techniques (Coomber, 1997; Couper, 2000; Hine, 2004; Saxon *et al*, 2003).

Having settled on an online survey it was necessary to select the proprietary package to be used for construction and management of the questionnaire. Details of the package selected and a comparison to the other shortlisted packages are contained in Appendix 3.

⁵¹ I was a member of the steering group for a parallel project at Kingston University on widening participation in postgraduate study which used a paper self-completion questionnaire and obtained 1,078 responses. Data entry alone took several person months.

The stages of the survey: pre-pilot; pilot; main

Prior to carrying out the main survey two pilot stages were completed. The first ‘pre-pilot’ stage was intended to move from concepts to specific questions, test these out with colleagues and ensure that the online survey software was functioning correctly. The second ‘pilot’ stage was a full implementation of the survey involving one institution during which different options for the questionnaire were tested. The design of the questionnaire and implementation of the survey were heavily influenced by the advice contained in Couper (2000), Couper *et al* (2001), Dillman (2007) and Fowler (1995).

Questions were designed to strike a balance between best practice in factual question design (see especially Fowler’s seven principles for survey questions, 1995, p.103) and the need for comparability with existing datasets (including HESA data), particularly for key socio-demographic variables such as social class. Where applicable, the questionnaire borrowed from an earlier study of postgraduate students at the University of Oxford (Heath and Zimdars, 2003). Reference was also made to the ‘Question Bank’ facility, formerly based at the University of Surrey, which holds copies of questionnaires from previous research projects and government surveys. For the pre-pilot stage only, each question was accompanied by an ‘additional comments’ box in which respondents were encouraged to remark on any difficulties they encountered in answering the question, problems with its meaning and so on. A final comments box was added at the end of the survey during the pre-pilot for general remarks.

An invitation to complete the pre-pilot questionnaire was emailed to 51 colleagues and friends who were or had once been postgraduates. It was not intended as a representative sample of any population; the aim instead was to ensure the survey worked and if possible to get some ‘expert review’ (through social science colleagues) of the

survey questions. The pre-pilot stage was successful and useful; full details are given in Appendix 4.

For the pilot, four potential permutations of survey length and within-question item ordering were experimentally tested to ascertain whether there was any effect on response rate (and item nonresponse). A 2×2 design was used so that there were four experimental groups, as shown in Table 4.2.

In order to conduct an experiment it is necessary to allocate subjects to the experimental groups at random. This presented a challenge because I lacked access to a sampling frame from which to select respondents at random for the pilot institution. Instead, a technical fix was implemented randomly to re-direct respondents clicking through to the advertised survey URL to one of four further URLs, each representing one of the experimental groups.⁵² This procedure is described in detail in Appendix 4. The experiment found no statistically significant differences between the survey versions in terms of overall response and item response, leading to selection of the long, non-randomised version of the questionnaire for the main survey. Details of the conduct and outcome of the experiment are also given in Appendix 4.

Table 4.2: Characteristics of questionnaire versions

	Random item ordering in selected questions	No random item ordering
Long version (32 questions)	✓	✓
Short version (23 questions)	✓	✓

The pilot received 545 responses overall. However 117 of these were ineligible on grounds of nationality and domicile, leaving 428 valid responses. This represents a response rate estimated at around 8%. This is low and somewhat disappointing, although it should be noted that it represents an 8% (non-random) sample of the population, rather than 8% of a *sample* of the population. Comparable response rates for online student

⁵² Thanks are due to Sam Smith of CCSR for proposing and implementing this solution.

surveys include the range 5-10% to 75-80% (varying by institution) for the highly-regarded US National Survey of Student Engagement (Porter and Umbach, 2006, Figure 1, p. 236); about 50% for the Destination of Leavers in Higher Education Longitudinal Study which used postal and telephone survey follow-ups (personal communication, James McLaren, HESA, 31 October 2007); 25% for the Higher Education Academy's Postgraduate Research Experience Survey; and a similar rate for the US Your First College Year survey (Sax *et al*, 2003). Purcell and Elias' (2005) longitudinal survey of graduates also achieved only a 25% response rate. However all of these surveys were run by survey organisations and/or could draw on substantial resources to maximise response rates.

The process of cleaning and coding data from the pilot survey threw up some instances where question wording could be improved or additional response categories added which had not come to light during the pre-pilot. Appropriate changes were made for the main survey. It also became clear that reminders to non-respondents would be important: 90% of responses were received within the first week, suggesting a reminder one or two weeks after the initial contact would have increased the response rate. Dillman (2007) recommends at least four contacts with the sample, comprising an initial contact prior to the survey, the survey invitation itself and then a series of reminders. Email regulations at the pilot institution forbade reminders. I decided not to send a 'prenotice' contact (Dillman recommends a postcard) as part of the main survey: surface mail addresses were not available for the respondents and there would seem little point sending a prenotice email about the receipt of another email!

The main survey ran for a six week period at each institution, with the first beginning in April 2007 and the last closing in July 2007. An initial email was sent to the population, followed by a reminder after approximately two weeks. The survey closed around four weeks later (at which point responses had tailed off). A summary of responses by institution is given in Appendix 5.

Although it had been my intention randomly to sample postgraduate students in the participating institutions, it soon became clear that practical and regulatory difficulties (and differences between institutions) made this unworkable. The research design originally envisaged the provision of email contact details for a random sample of postgraduates, together with a few basic academic details (mode of study, level of study, subject area) and the student's gender. Each postgraduate in the sample would be assigned a unique identifier. They would receive an invitation email, giving brief information about the survey and a URL for the online survey, incorporating their unique identifier. In this way it would be possible to monitor which members of the sample had responded in order to target follow-up mailings and compare respondents against non-respondents. Allocation of a unique identifier would also limit individuals to a single response and largely counter the possibility of response by those not in the sampling frame.⁵³

The planned design could only be implemented in *full* at one of the nine participating institutions. A second institution provided email addresses, mode of study and level of study, but not subject area; a third provided individual email addresses but no further details. The remaining six institutions declined to provide any data to me, arranging instead to circulate the survey invitation themselves. In these cases the invitations were sent to mailing lists of postgraduates. Since these six institutions sent the survey invitation to all their postgraduates, the whole population was contacted (rather than a sample) at the other three institutions too. Where contact details were not provided this meant there was, in principle, no control over who would be able to access the survey (since a recipient could forward the email to anyone), nor to prevent a single respondent completing the questionnaire multiple times. Where no unique identifier was allocated however, the

⁵³ There is no way to prevent a respondent forwarding the survey invitation to a third party outside of the sampling frame to complete instead of them, but this problem is shared with all self-completion surveys.

results were checked for duplicate responses and very few were found – these are detailed in Appendix 5⁵⁴ and were deleted prior to the analysis stage.

For three of the six institutions not providing individual email addresses it was not possible to separate out UK-domiciled postgraduates from others. To circumvent this problem two extra questions were added at the beginning of their surveys to act as a filter, ensuring only home students answered the main survey. The questions established the nationality and the ordinary place of residence of the respondent.⁵⁵

Social class: concept and measurement

Since the thesis is concerned primarily with the relationship between social class background and access to postgraduate study, two key issues were how to *conceive of* social class and how to *measure* it. In the event, epistemological concerns over-rode ontological ones: the approach adopted is to use an adapted version of the National Statistics Socio-Economic Classification (NS-SEC). This sacrifices some conceptual complexity for more practical benefits, such as enabling direct comparisons between results from my survey and those from other sources, chiefly the HESA datasets.

The fact that HESA uses NS-SEC to record students' social class background straightforwardly suggests that my survey should do the same, otherwise comparison with HESA data and the results of other projects (e.g. Purcell and Elias, 2005; Rudd, 1975; Zimdars, 2007a; all of whom use occupational social class measures) will be ambiguous. Supporting documentation details how NS-SEC can be derived using self-administered instruments (National Statistics, 2002) meaning the researcher can count on some degree

⁵⁴ There was no way to prevent a single respondent adopting several aliases and completing the questionnaire several times with different responses, although nor is there any reason to suppose this would be a common practice.

⁵⁵ At one of the participating institutions (University of Central Albion) it appears that initial invitation emails were sent to UK-domiciled students only, but reminders were issued to *all* postgraduates. This resulted in replies from students who were not within the target population (identified using the question on nationality combined with dates of earlier qualifications). These respondents were removed from the dataset.

of consistency and thus comparability with other sources. Furthermore, the method is subject to the quality control procedures which a large organisation such as the Office for National Statistics can bring to bear, offering some reassurance over the validity and reliability of survey questions.

However it is worth briefly considering the theoretical basis of NS-SEC and its relation to sociological theory in the substantive area of the sociology of education. The classification is the government's official measure of socio-economic background. It was developed to replace the previous somewhat *ad hoc* classification, Registrar General's Social Class (RGSC). In contrast to RGSC, NS-SEC has been developed out of and is grounded in sociological theory and research in stratification. It is strongly influenced by the social class schema developed by Goldthorpe and colleagues which has been used extensively in education and social mobility studies (e.g. Erikson and Goldthorpe, 1992; Goldthorpe, 1987; Halsey *et al*, 1980). The conceptual basis is neo-Weberian: class is essentially *economic* and specifically *occupational*.⁵⁶ The 'market' and 'work' situation of an exhaustive list of occupations is assessed and groupings of cognate occupations are assigned to 'categories' (*sic*) which are established *a priori*. There are seventeen such categories, including groups outside the labour market (students, never worked and long-term unemployed etc). These categories are then collapsible in a flexible way to nine, eight, five or three 'classes', using supplementary information on the supervisory/ownership status of the worker and the size of the establishment they work in. Only the three-class set is ordinal; the others are nominal (Rose and O'Reilly, 1997; Rose and Pevalin, 2003).

The conceptualisation of social class as essentially economic (*viz* occupational) has been subjected to sustained critique by some sociologists. Critics argue that changes to the occupational structure and the economy in general have fatally weakened the salience of

⁵⁶ A neo-Marxist alternative designed for an international comparative research project, the 'CASMIN' schema (Marshall *et al*, 1988), is in practical terms (number and nature of classes identified) very similar.

(occupational) social class as a meaningful category (Bauman, 1982; Beck, 1992; Giddens, 1991; Gorz, 1982; Pakulski and Waters, 1996) or that there is a *cultural* element to social class which is not reflected in occupational schemas. The latter group argues that consumption practices are important in social class processes, not simply the economic (production) sphere (Bourdieu, 1984; Devine *et al*, 2005; Reay, 2005; Skeggs, 1997) – hence occupation is perhaps a necessary *but not sufficient* signifier of social class (Bourdieu, 1987).

Whilst there are disagreements about how social class might be measured, the protagonists at least concur that class is in some sense *causal*. That is, inequalities between social classes (however defined) arise from processes of class formation and reproduction rather than being a side-effect of something else, a position adopted in this thesis. I take a loosely critical-realist view: social class is an observable manifestation of a ‘deeper’ causal reality, of a form of social inequality which might be understood as an *anthropological constant* in societies above a certain scale and which is readily recognisable to lay actors (Sayer, 2005). The term ‘class’ itself may be something of a misnomer since this dimension of inequality is probably manifested in continuous, rather than discrete hierarchies (Bottero, 2004), although capturing this fluidity empirically is very difficult in macro-sociological research.

How does the theoretical debate over the ontology of social class impact on the research questions? In one sense it is of minor importance as there is a strong link between NS-SEC categories and various outcome measures: health, mortality, education and so on (Crompton, 2008; Rose and Pevalin, 2003). ‘Class behind our backs’ (Bottero, 2005) continues to operate regardless of the existence or not of class identities. Wright (2005) argues that the ‘answer’ to the problem of measuring social class depends very much on the theoretical perspective of the particular author. The debate is increasingly between those who argue occupational class *equals* social class (Goldthorpe *et al*) and those who

reject this argument but still use occupation as a *proxy* for locating individuals in ‘social space’ (Bourdieu and others; Crompton, 2006). In all cases however social class is viewed as causal, even if quantitative research in this field is focussed on correlations between social class and particular outcomes.⁵⁷

The methodological problem is capturing other, non-occupational dimensions of class. The difficulties in operationalising cultural capital, for instance, were alluded to in Chapter 3. Faced with the choice of constructing a detailed measure of cultural capital/resources, as in the case of le Roux *et al* (2008), I have opted instead simply to measure parental education. This is a crude, if not clumsy measure of cultural capital, but it has clear precedent in research (including Bourdieu’s own) showing a stronger association between filial education and parental education than parental occupational class (Bourdieu and Passeron, 1979; Gayle *et al*, 2002; Rudd, 1984, 1987; Thomas and Quinn, 2007).

A better overall approach might have been to use some measure of residential location for postgraduates instead of occupational social class. Burrows has convincingly argued for the explanatory supremacy of geodemographic categories in predicting various social outcomes, despite their being essentially atheoretical constructions which elide measures of age, income, occupational class, ethnicity, consumption patterns etc. (Burrows and Gane, 2006; Savage and Burrows, 2007).⁵⁸ Applications in education bear this out, with geodemographic measures correlating very strongly with school-level educational attainment (Webber and Butler, 2005) and higher education participation (HEFCE, 2005a). Geodemographic categorisation is derived using UK postcodes and proprietary software; I decided not to pursue this for postgraduates since the status of their address is ambiguous. Some postgraduates are ‘settled’ older students; some are transient, residing near their institution prior to moving on to employment; others might give a parental address.

⁵⁷ I return to the question of causality and process in discussing of areas for further research in Chapter 9.

⁵⁸ Although there has been some theorisation of the ‘spatialisation’ of social class (Parker *et al*, 2007).

My approach therefore is to follow Crompton (2008) in being sceptical about the ontological depth of the ‘employment aggregate’ approach, but to accept its practical utility as a proxy. I accordingly use the NS-SEC schema, adapting National Statistics’ guidance on derivation to the circumstances in hand (see Appendix 6).

Data and method: a critical reflection

Having set out the rationale for the research design and described its implementation in practice, it is worth briefly reflecting, with the benefit of hindsight, on the strengths and weaknesses of my approach. I will focus on the use of an online survey and situate the research within the ‘comparative case study’ tradition in the sociology of education and social mobility.

Online surveys were, at the time of data collection, still relatively novel. There remain several concerns about their acceptability and so this section considers their advantages and disadvantages with reference to available methodological literature. It justifies the decision to use such an instrument for this study. Online surveys have been criticised in the past for generating non-coverage bias, since access to the internet and computer literacy are typically pre-requisites for responding and internet users are systematically different to non-users.⁵⁹ However this criticism is usually applied to ‘open invitation’ surveys and/or those which attempt to extrapolate their findings from internet users to the general population. Where a sampling frame is available and the population of interest is known to have internet access and sufficient IT literacy to fill in a web-form, these shortcomings do not apply (Couper, 2000; Dillman, 2007). Various experiments have been conducted on aspects of sample and instrument design for online surveys: earlier research gave equivocal results (Couper *et al*, 1999), but more recent studies show little

⁵⁹ This criticism recalls earlier difficulties experienced with telephone surveys prior to the near-saturation coverage of households by telephone connections.

effective difference between online and hard-copy postal methods in response rate or quality (Kaplowitz *et al*, 2004; McCabe *et al*, 2006). Given the massive upsurge in broadband internet connections in the UK,⁶⁰ this is an area where change is exceptionally rapid, with internet take-up doubtless outdoing the ability of survey methodologists to keep up. It is self-evident in contemporary British higher education that email is ubiquitous and the *de facto* communication of choice. Indeed even in 1999, Couper *et al* (2001) found just 5% of their sample did not open an emailed survey invitation.⁶¹

For the population in question – postgraduate students – the prognosis is more promising. Research indicates those most likely to respond to internet surveys are the highly educated and those with access to a computer (Couper, 2000), criteria which postgraduate students meet well. Survey salience is also an important factor (Dillman, 2007; Porter & Whitcomb, 2005); a survey of postgraduates about postgraduates would seem to satisfy this criterion too.

It is clear that the online survey method adopted is – in principle – well-suited to the research aims. In many senses it was a success, with the number of valid responses being large for a doctoral research project *and certainly well beyond what would be manageable for a lone researcher using paper-based methods*. Since there are no data available about the social class background of UK postgraduates, even a partial survey adds something to the stock of knowledge in this area. The drawback of course has been the achieved response rate and the bias this would introduce to the results without careful allowance for nonresponse and missing data. I discuss these issues in detail in the following chapter, where I show how methods for weighting and imputing responses can be used partially to adjust for sampling (or more correctly response) errors.

⁶⁰ Broadband quadrupled from 8% to 31% of all internet connections in the period between April 2003 and July 2005 (Office for National Statistics, 2006). Over half of households had broadband connections by 2007 (Office for National Statistics, 2008).

⁶¹ It is to my advantage that most of the extant literature on online survey research uses student surveys; findings are thus directly applicable to my study.

Whilst the research design was based on systematic implementation of the latest best-practice advice for online surveys available in the literature, there are inevitably aspects that I would change were I to run the survey anew. Response rates were highest – and with the best approximation to the population – at the institution (University of Gueset) which matched the survey design most closely, providing individual ‘preferred’ email addresses and other basic details about the survey population. At some other institutions it was clear that the individuals and/or office which acted as sponsor of the survey did not have the authority to provide contact details as requested, leading to extensive negotiations and compromise on the design. Were I to run the survey again, I would first randomly sample a selection of institutions, stratified by mission and location (to allow inferences to be drawn about all UK postgraduates) and then only proceed with the survey on condition that institutions agreed to implement the design in full.

The research design is basically cross-sectional. There are longitudinal elements, in that the HESA data give repeated cross-sections for four academic years, the DLHE survey tracks graduates’ early entry into the labour market and the online survey collected retrospective information about family and educational background. However it is not a ‘true’ prospective longitudinal cohort. Instead the research design attempts to triangulate cross-sectional data to provide a snapshot both of immediate post-first-degree progression to postgraduate study by social class and the class background of current postgraduates. This means it is essentially descriptive rather than explanatory in nature: causal inferences might be made, but they must remain speculative in comparison to what might be concluded from a large prospective cohort study on these matters (de Vaus, 2006). In future, such analysis might be possible, but with the available data I contend that the design chosen is the ‘least worst’ option – and insofar as it provides new data about the social class of postgraduates, certainly better than not bothering at all.

The survey is not a probability sample. It might better be understood as within the tradition of comparative case study research following, albeit on a far smaller scale, studies such as Shavit and Blossfeld (1993), Erikson and Jonsson (1996), Shavit and Müller (1998), Arum and Müller (2004) and Shavit *et al* (2007). The latter observe that variable-oriented research generalises probabilistically across a large number of cases, whereas the case-oriented approach focuses holistically on the narrative of a small number of cases giving a deeper – but less generalisable – account of causality. By combining population data on postgraduates and first-degree graduates progressing to postgraduate study with a more in-depth look at the social background of postgraduates in eight institutions I am following Shavit *et al* in trying to plot a course between the two approaches.

Where I might differ from the comparative case-study approach is in the emphasis placed on causality. The thesis is an attempt to *describe* the social class background (and other characteristics) of postgraduate students and to compare these to first-degree graduates. This will certainly allow analysis of the association of factors with one another, and an evaluation of the theories about these relationships detailed in Chapter 3; identifying *cause* will inevitably be more speculative. As Savage and Burrows (2007, p. 896; original emphasis), in their critique of empirical sociology’s methods note, causality is something social scientists “are very bad at” and a new programme should “embrace instead an interest in *description and classification*”. That view has not gone unchallenged, but it does reinforce the contribution which my arguably more modest descriptive ambition can make, especially to a topic which is currently under-researched.

Conclusion

In this chapter I explained why and how data for the research was obtained. I assessed the suitability of secondary data for answering the research questions and described the

reasons for selecting HESA data. I made the case for primary data collection via an online survey and set out the means by which this was realised, including how the key variable, social class, was operationalised. Finally, I reflected on the research design, including its epistemological dimensions before concluding that, despite some weaknesses identified in hindsight, the approach selected is appropriate for answering the research questions set.

In the next chapter I present a basic description of the characteristics of the postgraduate population as seen in the postgraduate student dataset, the destinations dataset and the online survey dataset. Particular attention is given to issues of nonresponse and missing data so that analyses in subsequent chapters can be adjusted to avoid, so far as possible, bias and error resulting from these factors.

5 Data quality: compensating for nonresponse and missingness

Introduction

Having described in the preceding chapter how and why data were obtained on postgraduate students, I now turn to an initial exploration of the datasets acquired. In this chapter I will outline the basic characteristics of the postgraduate population under study, highlighting the major axes of differentiation within the population, such as field of study, institution type and type of qualification. Chapter 2 showed that these features of postgraduate study make it a complex and diverse activity. In Chapter 3 this diversity was shown to be associated with differences in outcome by social class in access to undergraduate study. In other words such differences are not simply ‘confounders’ but are implicated in the process by which social class inequalities emerge in higher education.

In addition, it was noted in Chapter 4 that response rates to the online survey of postgraduate students were low. Furthermore, there was nonresponse of about 17% in the DLHE survey and even the HESA student record census has some item nonresponse. Since missing data has the potential to skew and bias the results of statistical analyses (Allison, 2002; Groves *et al*, 2002; Lohr, 1999) and since unit and item nonresponse in surveys is rarely a random outcome (Dillman, 2007; Porter and Whitcomb, 2005), any analysis which does not take into account missingness could misrepresent reality, a charge laid against a considerable proportion of studies of access to higher education (Gorard and Smith, 2006). At the very least then, a description of the patterns of unit and item nonresponse in the datasets is required. This chapter therefore includes an explication of missingness in all three datasets. As will be shown, the likelihood of nonresponse in both the destinations and online survey datasets is associated with similar factors: gender, subject of study, age and institution type, with qualification type also important in the online survey. These

missingness patterns are compared to extant research on the causes of survey nonresponse, with particular emphasis on student surveys and on emerging findings about online surveys.

Techniques are available for adjusting for missingness and nonresponse in survey data. I review some of these, with reference to the literature on missingness mechanisms within social statistics. I focus on the suitability of adjustments for the particular problems caused within my datasets by nonresponse and missingness. I then outline and justify the strategy – poststratification weighting – adopted for my particular datasets and explain why other potential approaches were not pursued. Poststratification weighting involves adjusting the values obtained from nonmissing responses to ‘stand in’ for nonrespondents, using known data about the sample or population. I use the comprehensive data available in the HESA datasets to adjust for nonresponse in the destinations and online survey datasets. Having derived weights, I compare the weighted and unweighted datasets.

The chapter concludes with an analysis of social class missingness in the destinations dataset. Overall, social class is not recorded for about 36% of respondents. I consider the potential reasons for missing social class data and then discuss whether missing values could be imputed but reject this on both theoretical and practical grounds. Instead, a complete-case analysis is preferred, with some sensitivity analysis provided regarding progression to postgraduate study and prior academic achievement.

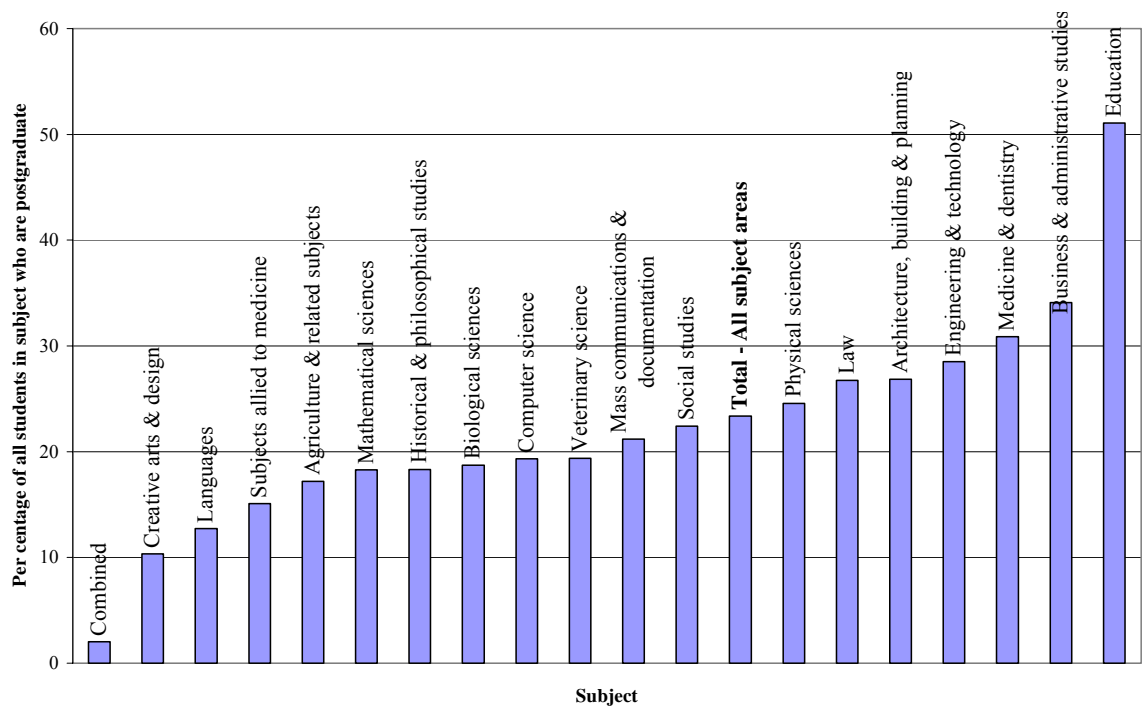
This approach, discussing the characteristics of the postgraduate student body and statistical techniques for dealing with missingness and nonresponse, might seem overly technical. I contend instead that it is not simply a necessary preliminary but rather represents the first stage of the analysis proper. Understanding the broad features of the postgraduate student body and the strengths and weaknesses of the datasets gives a firm foundation for the more detailed analyses presented in Chapters 6 to 8.

The postgraduate student body

Chapter 2 described three principal sources of variation in postgraduate enrolments: subject discipline, institution and qualification type. That is to say, the balance of postgraduate study (taught/research) varies considerably by institution and by subject; the number of postgraduate students varies widely across institution and subject and cannot be read-off from the number of undergraduates in either; and postgraduates' socio-demographic characteristics differ markedly by subject, institution and qualification type. Sastry (2004a) shows that research students are more likely to be male, studying in pre-1992 universities and to have a first-class honours degree and sponsorship. Analysis of HESA figures for 2005/06 (source: HESA, 2007, table 2e) shows that in Education there are more postgraduates than undergraduates, in Business & Administrative Studies more than one-third of students are postgraduates, whereas in Creative Arts & Design only about one-tenth of students are postgraduates (see Figure 5.1). Research students are concentrated in relatively few institutions, but taught postgraduates are more dispersed. Similarly, 62% of research students were in science, engineering and technology subjects in 2005/06, compared to only 33% of taught higher degree students; most of the latter were in arts and social sciences, with Business & Administrative Studies alone accounting for 29%. These variations are mirrored in the socio-demographic make-up of subjects, institutions (Gutiérrez Esteban and Wakeling, 2006; National Audit Office, 2002; van de Werfhorst *et al*, 2003; Wakeling, 2005a, 2009a) and qualification types (Connor *et al*, 2004; Wakeling, 2005a, 2005b).

A first degree in a particular subject from a particular institution will lead more readily to some outcomes than others. For instance, graduates in Medicine are likely to enter directly into medical practice on graduation; graduates in Chemistry often proceed to doctoral study in the subject; and graduates in History often proceed to a taught higher

Figure 5.1: Postgraduates as a percentage of all students in UK HEIs, by subject discipline



Source: HESA (2007a), Table 2e.

degree. Medicine graduates are much more likely than those in Chemistry or History to have a social class background in the NS-SEC group ‘Managerial and professional occupations’. The logical corollary is that the investigation of social class differentials in accessing postgraduate education must take into account subject-conditional pathways. Without doing so, one could erroneously conclude, from an analysis including these three subjects, that the social class background of postgraduates is *less* exclusive than at undergraduate level. Similarly, access to doctoral study typically requires a ‘good’ honours degree (first-class or upper-second class honours) and sometimes a masters qualification. Achievement of a ‘good’ degree declines monotonically with social class (Smith and Naylor, 2001, 2005), which generates an expectation that, as for undergraduate level, there is a strong association between social class, prior achievement and entry to the next educational level. The prediction here would be a reduction in the proportion of

postgraduates from lower social class backgrounds compared to undergraduate level, a reduction which, on the face of it at least, would not be unfair.

Likewise graduates of particular institutions are more likely to proceed to postgraduate study. Sastry (2004a) notes that 26.4% of graduates from the School of Oriental and African Studies progressed to taught postgraduate study as a first destination 2002/03, compared to an English mean of 7.9%. The University of Cambridge sent 13.9% to a research degree, closely followed by Imperial College (11.0%), some four to five times higher than the English mean of 2.3% and 23 times the rate for post-1992 universities and colleges (0.6%). As Sastry (2004a) shows, these institutional differences themselves hide different subject balances (e.g. Imperial is a specialist science institution) and social class compositions. It is quite possible that institution-level and subject-level trends could cancel each other out, with some factors working to make postgraduate study more socially exclusive and others the opposite. Clearly there is a complex range of factors likely to affect entry to postgraduate study. To establish a 'direct' effect of social class (or at least to understand how social class might be a prior and thus indirect influence), controlling for institution and subject and disaggregating postgraduates into types of qualification will be important.

The heterogeneity of postgraduate education was highlighted in Chapter 2. The discussion above has developed the detail of these differences and related them explicitly to the socio-demographic composition of the student body. The importance of these differences will become further evident in the next chapter where such differences across 'academic' factors are shown to account for much of the apparent social class inequality in progression to postgraduate study.

Missing data

The above review of the characteristics of the postgraduate student body made clear that student socio-demographics are structured by subject of study, institution and type of qualification. An analysis which ignores these factors risks misrepresenting the pattern of postgraduate participation by social class. A related problem is missing data: unless observations are missing from the datasets independently of subject, institution, qualification type or other important variables, ignoring patterns of missingness in the analysis could also misrepresent the social class background of postgraduates. This section considers patterns of missingness in the research datasets.

Missingness is only a minor issue for the postgraduate student dataset as the data are complete in respect of mode of study, qualification aim, current institution, region of domicile, gender and subject of study (and this being a census, full coverage is assumed). Some item data are missing on the variables covering postgraduate student age, source of tuition fee and qualification on entry (patterns of missingness for the HESA datasets are described in detail in Appendix 1), although the amount of missing data is small, ranging from 0.6% of cases for age to 8.1% for highest qualification on entry. This amount of missingness is unlikely substantively to bias the results.

Missingness is more problematic in the destinations dataset. Here there are two forms of missingness: one is unit nonresponse, where individuals in the graduating cohort have been non-contactable or have not responded to the survey; the other is item nonresponse, where individuals have responded to the survey but some information about them is missing. Across the four academic years 2001/02 – 2004/05, the mean unit nonresponse to the destinations survey was relatively low at 16.9%, ranging from 16.2% in 2001/02 to 18.1% in 2004/05. Furthermore, the population frame is known, together with a range of variables about each individual within it which permits some investigation of the

missing data mechanism for nonresponse. Item nonresponse complicates matters: there is item nonresponse for four variables in the population frame data (age, ethnicity, social class and a dummy variable indicating whether or not the student attended state school), ranging from 0.3% for graduate's age to 28.3% for social class. The former is trivial, but the latter is not, since it is the key variable of interest (and 24.7% of cases are missing the state school variable too, also substantively important for this study). It implies that analysis of the destinations dataset needs to proceed carefully, adjusting for missing data appropriately. However in comparison with most datasets used for social science research, missingness is relatively low both on an item and unit basis.⁶²

Unfortunately this does not hold true for the data collected via the online survey. Excepting data which are missing by design,⁶³ item nonresponse was low, with no item registering more than 5% nonresponse and most being complete or having less than 1% nonresponse (equivalent to just one or two respondents). However *unit* nonresponse, that is respondents who did not complete the survey at all, was far higher. The survey at each institution attempted full population coverage, but the assumed response rates were very low, ranging between 5.6% and 19.2%, with a weighted mean response rate of 9.5%. As already stated, the institutions taking part in the survey were selected by a non-random convenience sample; this means that extrapolating from the sample to the UK postgraduate population is problematic. However with a census (or adequate random sample) of each institution's postgraduates it should be possible to derive estimates of social class background and other values of interest for each participating institution. With unit nonresponse at the level seen, this too is called into question unless adjustments are made to the data.

⁶² The degree of missingness has certainly improved since 1999/2000, when about two-thirds of social class data was missing for the graduating cohort (Wakeling, 2003b).

⁶³ An example of data missing by design is the variable which records the year when the respondent's most recent postgraduate qualification was awarded: many respondents did not have a prior postgraduate qualification, hence not completing this question does not comprise item nonresponse.

Having detailed the patterns of missingness in the research datasets, it is important to understand, as far as possible, the process which generated nonresponse and missing data as this will be important in determining how missing data should be dealt with in the analysis. Accordingly, the next section examines research on nonresponse in surveys, with a particular focus on online surveys and those involving students.

Causes of nonresponse in online and student surveys

Although the literature on factors associated with survey nonresponse is mature, that on factors specifically affecting web-based surveys is much less developed. Some of this literature uses student surveys as a convenient means of carrying out experiments on nonresponse and there is also growing interest in so-called ‘institutional research’ in maximising student ‘feedback’ (Banta *et al*, 2009; Porter, 2005). Vehovar *et al*’s (2002) general survey of factors generating nonresponse in web surveys suggests the move from target population to achieved sample involves more steps and can be more problematic than traditional methods, although their identification of technical restrictions (bandwidth, browser capabilities etc.) as a significant source of nonresponse now seems moribund.⁶⁴ They raise a number of other issues which may affect response rates, including web-page design, email routing problems (see Appendix 5) and design/frequency of survey contacts. However these might be considered essentially *random* factors affecting nonresponse, since typographical errors in email addresses, for instance, are unlikely to induce systematic bias, even if they reduce the *overall* response rate.⁶⁵ On the other hand, they

⁶⁴ Allowing for publication lead-times, Vehovar *et al*’s piece is likely to have been written at the latest in 2001, when UK household internet coverage stood at only 38%.

⁶⁵ Microdata from the University of Gusset included individual email addresses, gender and type of qualification studied (PhD, taught masters etc). It was thus possible to identify which students did not receive the survey invitation email by reason of it being ‘undeliverable’ to their email account for some reason (e.g. the account had expired, there was no such address etc). A logistic regression model was fitted to the data to establish whether student gender or qualification type affected the probability that the message was not deliverable. These variables did not significantly predict whether an email would be undelivered.

identify three separate statuses through which potential web survey respondents must pass to be included in the results:

- The 'aware' group. This is where the contact (in my case an email) reaches its intended recipient.
- Clickers. This is the subset of the aware group who click the survey URL to successfully access the web survey.
- Completers. This is a subset of clickers who, having loaded the survey, complete and submit it.

Vehovar *et al* highlight various characteristics of potential respondents which will influence their progression (or not) through these stages. Their own research indicated that younger people, those using the internet more intensively, those with a high level of education and (contrary to most other survey research) men were all more likely to respond to web surveys. In contrast, a study involving older people in the US found coverage more of an issue than nonresponse in an online survey, with weighting for demographics not sufficient to remove bias (Couper *et al*, 2007); the reasonable assumption that coverage error is low for postgraduates would mean therefore that weighting *would* be sufficient to mitigate nonresponse bias.

Other research has focussed specifically on factors affecting unit nonresponse at the individual and institutional levels in online student surveys. At the individual level, a project using four separate surveys of undergraduate students in one US liberal arts college, where complete demographic data on the sampling frame was available, found being male, non-white, of lower academic ability and having lower 'engagement' with the institution were all associated with nonresponse. Furthermore, the salience of the survey topic affected individuals' propensity to respond. Perhaps more significantly for my

purposes, students without financial aid (i.e. the more affluent) were more likely to respond, controlling for other factors (Porter and Whitcomb, 2005). These findings are generally consistent with factors affecting response rates to surveys using other media (Dillman, 2007). If replicated in my datasets, one would expect over-representation of women, students of white ethnicity, those of a higher social class background and with higher academic ability. The latter expectation implies that for the destinations dataset, one would expect those most likely to progress to postgraduate study on the grounds of ability (i.e. those with a ‘good’ honours degree) would also be more likely to respond to the survey; and that for the online survey, PhD students would be more likely to respond. These expectations are borne out, as detailed in the section below.

Institutional factors are also associated with unit nonresponse in online student surveys. A study investigating nonresponse to the US National Survey of Student Engagement found lower *average* academic ability at the institutional level was associated with lower individual response rates. In other words, taking two hypothetical students of equivalent academic ability at different institutions, the student at the institution with higher mean academic ability is more likely to respond, controlling for other factors. Students at urban campuses and those with a high density of built ‘footprint’ were also less likely to respond, controlling for individual factors (Porter and Umbach, 2006). The research found the relative availability of computers on campus affected response rates. There was no way to determine the PC:student ratio at participating institutions nor the proportion of postgraduates with internet access at home and/or work (although see Appendix 5).

Overall, the research discussed above suggests response rates for the institutions taking part in the online survey will vary, which means any extrapolation of statistics from my clusters to the population (i.e. all UK postgraduates) needs to be interpreted with care. With the destinations dataset the basis for making inferences about progression to

postgraduate study is more secure, although again some means of formally adjusting for institutional differences will give greater confidence in estimates derived. The clear expectation is that some kinds of students are more likely to respond than others. However in order to determine the impact this will have on the substantive analyses, it is first necessary to understand how various patterns of nonresponse and missingness can generate bias and to assess the extent of missingness and nonresponse in the research datasets.

Missing data mechanisms

Essentially, the implication of missingness for statistical analysis depends on the missing data mechanism (Allison, 2002; Lohr, 1999). If data are ‘missing completely at random’ (MCAR) there is no relationship between the value of the dependent variable (if there is one) and missingness, nor between the values of any independent variables and missingness. In this circumstance, the data are effectively a random sample of the (notional) complete dataset. Since the online survey attempted full population coverage, data MCAR would represent a random sample of between 9.5% and 19.2% in the respective institutions and would allow valid inferences to be drawn about the institutional postgraduate populations, albeit with a loss in statistical power (and hence an increase in standard error).⁶⁶ In other words, the missing data mechanism would be ignorable (Allison, 2002). This might apply to variables in the HESA datasets where the prevalence of missingness is much lower; however it remains possible that differences between respondents and non-respondents (whether on a unit or item basis) are systematic.

A less stringent assumption is that data are ‘missing at random’ (MAR); that is the probability that the dependent variable is missing is unrelated to the value of the dependent variable *itself* once independent variables have been controlled for (Allison, 2002). For

⁶⁶ The achieved samples are short of the required sample size to give a 2% margin of error and 95% confidence interval using Thompson’s (1987) procedure for estimating multinomial proportions (since the value of interest is social class, a multinomial variable).

instance, in the destinations dataset, predicting the probability that a graduate proceeds to postgraduate study is the key outcome of interest. Under MAR it is acceptable for the missingness of proceeding to postgraduate study to vary by (say) gender and subject area; however the missingness cannot vary according to whether the graduate proceeded to postgraduate study. Clearly, since the data on which such an assumption is based is (by definition) missing, it is impossible to verify the MAR assumption from within the dataset itself. The analyst must either accept the assumption on faith or use other sources to verify it. Under the MAR assumption, listwise deletion (i.e. a ‘complete case analysis’) is the least-worst option for regression analysis where there is item nonresponse, avoiding biased estimators in some circumstances, especially under logistic regression, the main functional form used in this thesis (Allison, 2002). If neither the MCAR or MAR assumptions are met, the data are said to be ‘not missing at random’ (NMAR) and hence the missing data mechanism is non-ignorable.

Can the missing data mechanism for variables in my datasets be considered MCAR or MAR? To be MCAR, the probability of missing data on the variable of interest must be unrelated to itself or any other variable in the dataset (Allison, 2002). Variables in the postgraduate student record dataset exhibit item nonresponse so low that little would be lost by treating them as if they are MCAR and simply excluding cases with missing data on a given item from the analysis – so-called ‘listwise’ deletion (Allison, 2002). As noted above, by definition it is not possible in practice to determine whether the probability of responding to the DLHE survey is related to the outcome the survey is seeking to measure. However we might expect those who are unemployed to be less likely to want to respond (and unemployment may be associated with an unobserved variable on propensity to respond!). On the other hand, those who are unemployed are much more likely to have returned to their parental home and have time on their hands for completing surveys (!), whereas employed, studying or travelling graduates may have moved away and therefore

be more difficult to contact. It is possible to use other data sources to approximate graduate destinations and provide an empirical ‘second opinion’, although some of the same difficulties arise (i.e. those unlikely to respond to the DLHE share characteristics with those not responding to other surveys). The Quarterly Labour Force Survey for December 2005 – February 2006 (the same period in which the 2004/05 DLHE survey was conducted) shows that of 500 respondents who had a degree obtained in 2005 as their highest qualification, 25.2% did not undertake paid work in the survey’s reference week. The equivalent figure in the DLHE was 29.9%. Only 11.4% of 2005 graduates in this instance of the LFS were undertaking further study full-time, compared to 14.6% of DLHE respondents in 2004/05. This suggests that unemployed graduates were slightly more likely to respond to the DLHE, as were those undertaking further study. It is likely therefore that nonrespondents are disproportionately those graduates with employment. Since employment as a first destination is not randomly distributed across gender, academic attainment, social class, subject and institution (see for instance, Brennan and Shah, 2003; Brown and Scase, 1994; Brown and Hesketh, 2004) it is obvious that nonresponse will be associated with other variables in the dataset.

Table 5.1: Whether or not graduate responded to First Destinations Survey/DLHE survey, by gender, 2001/02 – 2004/05 (pooled)

Gender	Responded	Did not respond
Male	309,585 (81.9%)	68,565 (18.1%)
Female	410,340 (84.1%)	77,835 (15.9%)
<i>Total</i>	<i>719,925 (83.1%)</i>	<i>146,405 (16.9%)</i>

Source: FDS 2001/02; DLHE 2002/03 – 2004/05

A brief look at nonresponse across other variables in the datasets demonstrates this. As $N = 866,325$ in the destinations dataset, even small differences between respondents and non-respondents are likely to be statistically significant. For instance, the group means

for age are very similar: 23.4 years for respondents and 23.8 years for nonrespondents. A *t*-test of these differences indicates they are significant at the $p < 0.001$ level,⁶⁷ although such a level of bias is not substantively interesting. Similarly, men were less likely to respond to the DLHE survey than women (see Table 5.1), again statistically significant (using the chi-square test) at the $p < 0.001$ level.

Ruling out MCAR for variables in the online survey dataset is a different prospect because here there is no dependent or ‘response’ variable as such but instead a set of covariates. One can investigate whether the probability of nonresponse *per se* is related to these covariates, although this has to be at an aggregate level for those seven out of nine institutions which did not provide microdata for the population frame. Table 5.2 lists individual factors associated with non-response in the survey literature and some other important variables, comparing the proportion of respondents in the online survey possessing that characteristic with the HESA population data for the institution for 2004/05.⁶⁸ It is clear that on most indicators for most of the institutions there are substantial differences between the online survey respondents and the postgraduate population, even if we allow for some change in the population between 2004/05 and 2006/07 (when my survey was conducted). As with previous studies, male postgraduates were less likely to respond and PhD students were substantially more likely to respond than masters or PGCE students. Full-time students were also massively over-represented among respondents (with the exception of Damethorpe and Riverford). Self-funded students were, in most of the participating institutions, substantially less likely to respond, but there seemed little meaningful difference in the age profile of respondents and the population as a whole. Unlike the US case, ethnicity did not make a great deal of difference to the likelihood of response. To conclude, the assumption that the data in the online survey are MCAR is not sustainable.

⁶⁷ Technically, a test of statistical significance is not required since these are population data and therefore there is no possibility of sampling error.

⁶⁸ There are institutional factors which will affect the probability of response, as identified above.

There may be one institutional exception to this, which reinforces the conclusion of the previous chapter that a refusal to compromise on the survey design would (with hindsight) have delivered better quality results. The University of Gusset provided (limited) microdata on its postgraduates and allowed individualised contact and follow-up. This meant respondents and nonrespondents could be directly compared and nonrespondents targeted for follow-up action. The characteristics of the survey respondents for this institution are the closest match to HESA population data amongst all the participating institutions. Indeed, the apparent difference in the likelihood of PhD students responding at Gusset is largely a result of the difference between the HESA record for 2004/05 and the actual composition of the 2006/07 population, where PhD students comprise 35.9% of all postgraduates (compared to 34.0% of the respondents).⁶⁹

So are data MAR for variables in the online survey or DLHE datasets? For the former, they are by definition. Since nonresponse is itself the outcome variable and is binary, where no response is observed for a respondent then they must be a nonrespondent. In other words, the value of the outcome variable does not vary by missingness. It can only vary according to the value of other variables and hence can be considered MAR. Considering response to the DLHE to be MAR must remain an assumption since it cannot be known whether the nonrespondents differ systematically from respondents; in other words, as shown above, it is plausible that the probability that the outcome variable is missing is related to that variable's value. However, since the response rate for the DLHE dataset is high and the characteristics of nonrespondents are known, this is not an altogether unsafe assumption. The advantage of treating variables in both datasets as MAR is that it allows the application of weighting methods to adjust for nonresponse (Lohr, 1999).

⁶⁹ Source: Gusset website.

Table 5.2: Comparison of characteristics of survey respondents, by participating institution, with HESA postgraduate population data, 2004/05

Individual characteristic	Otherford University		Dibley City University		Damethorpe University		University of Topton	
	Survey	HESA	Survey	HESA	Survey	HESA	Survey	HESA
Male	0.563	0.690	0.387	0.323	0.208	0.324	0.389	0.442
Non-white	0.117	0.103	0.266	0.318	0.054	0.044	0.182	0.091
‘Engaged’ student/survey salience (proxy: PhD student)	0.443	0.122	0.121	0.033	0.069	0.008	0.544	0.183
Full-time student	0.625	0.394	0.368	0.264	0.395	0.482	0.693	0.256
Mean age	32	33	40	37	35	31	33	34
Modal age	22	22	38	27	23	22	23	23
Median age	28	31	39	36	33	27	28	33
Self-funded student	0.363	0.361	0.563	0.428	0.469	0.303	0.345	0.831
Masters student	0.405	0.528	0.476	0.552	0.277	0.261	0.318	0.676
PGCE student	0.003	0.047	0.085	0.126	0.554	0.602	n/a	0.075
<i>Total</i>	<i>375</i>	<i>3,170</i>	<i>357</i>	<i>3,350</i>	<i>130</i>	<i>1,120</i>	<i>252</i>	<i>4,235</i>

Individual characteristic	University of Ravingham		University of Central Albion		University of Riverby		University of Gusset	
	Survey	HESA	Survey	HESA	Survey	HESA	Survey	HESA
Male	0.346	0.504	0.358	0.469	0.327	0.450	0.417	0.459
Non-white	0.068	0.163	0.106	0.129	0.102	0.130	0.046	0.047
‘Engaged’ student/survey salience (proxy: PhD student)	0.577	0.265	0.536	0.305	0.041	0.062	0.340	0.253
Full-time student	0.817	0.449	0.827	0.536	0.122	0.186	0.628	0.584
Mean age	28	32	29	31	37	33	31	31
Modal age	23	23	23	22	27	24	23	23
Median age	25	29	25	28	33	31	26	26
Self-funded student	0.266	0.443	0.256	0.335	0.327	0.503	0.255	0.428
Masters student	0.313	0.466	0.277	0.373	0.429	0.386	0.483	0.473
PGCE student	0.023	0.051	0.128	0.131	n/a	n/a	n/a	0.060
<i>Total</i>	<i>428</i>	<i>6,610</i>	<i>321</i>	<i>3,535</i>	<i>49</i>	<i>585</i>	<i>259</i>	<i>2,095</i>

Notes: Response rates in Appendix 5 are calculated from the best available data for 2006/07 and so may be lower or higher than those derived from the ‘totals’ row above (which compares the achieved number of responses against HESA’s postgraduate total for the institution for 2004/05). Errors in the selection of the survey population for the Universities of Topton and Gusset meant that PGCE students were not included. Sources: online survey; DLHE 2004/05; HESA Student Record 2004/05.

A preliminary step before considering possible adjustments for nonresponse in the destinations dataset is investigation of factors associated with nonresponse using nonmissing data. Fortunately for this dataset there are a number of variables with complete population information which can be analysed as potential predictors of nonresponse. As seen in Table 5.2, gender is one of these variables. The others are age, first degree institution, major source of tuition fees, degree classification obtained, academic year and subject of study. A bivariate examination of response/nonresponse against these variables shows each to be associated with nonresponse. A multivariate logistic regression model was fitted to predict whether or not a student responded to the DLHE survey, using the above-named variables as predictors. The results are given in Table 5.3.⁷⁰

The results indicate that, holding the other variables in the model constant, the following are associated with a higher probability of responding to the survey:

- Being female
- Paying one's own tuition fees (as opposed to being sponsored)
- Attaining a first-class degree (response probability declines monotonically with classification)
- Being a younger graduate
- Studying Medicine & Dentistry
- Graduating in 2001/02

⁷⁰ This model includes standard errors. Such statistics are meant to indicate the proximity of the coefficients to the true population value by accounting for sampling error. Since the data here are from a finite population which is – in principle at least – complete, there is no sampling error as such. There may be forms of non-sampling error (coverage error etc), but these are not dealt with by standard errors and the like. In this case statisticians often refer to the idea of a ‘superpopulation’ (Lohr, 1999) in which the finite population in question is held to be embedded. The superpopulation is the universe of all possible measurements of the population. For the data in question, measurements were taken at four particular time points; the superpopulation might consist of all possible snapshots of that data (including those in the future). Doubts have been expressed about the merits of the superpopulation assumption since it takes the analysis away from observed (or even observable) values in the real world. On the other hand of course, all statistical models are artificial constructs which attempt to simplify reality. These issues have been discussed at length in relation to education and social science in the debate between Gorard, and Plewis, Goldstein and others (Goldstein and Noden, 2003, 2004; Gorard, 2003a, 2003b, 2004, 2007; Hutchison and Schagen, 2008; Plewis and Fielding, 2003). In presenting models I follow the convention of reporting standard errors and *p* values.

Table 5.3: Logistic regression model of nonresponse in destinations dataset

Variable	Odds ratio		Standard error
Age	0.984	***	0.001
<i>Tuition fees</i>			
Student had no sponsorship for undergraduate tuition fees		(ref)	
Student was sponsored for undergraduate tuition fees	1.205	***	0.007
<i>Degree classification</i>			
First class honours		(ref)	
Upper second class	0.794	***	0.009
Lower second class	0.600	***	0.007
Third class	0.433	***	0.006
Pass	0.493	***	0.008
<i>Subject of study</i>			
Medicine & Dentistry		(ref)	
Subjects Allied to Medicine	0.426	***	0.012
Biological Science	0.369	***	0.010
Agriculture & Veterinary Science	0.474	***	0.018
Physical Sciences	0.425	***	0.013
Mathematical & Computing Sciences	0.349	***	0.010
Engineering	0.373	***	0.011
Technology	0.333	***	0.014
Architecture, Building & Planning	0.418	***	0.014
Social Studies	0.321	***	0.009
Law	0.351	***	0.010
Business & Administrative Studies	0.348	***	0.010
Mass Communications & Documentation	0.301	***	0.009
Linguistics, Classics etc.	0.317	***	0.009
European Languages etc.	0.339	***	0.012
Non-European languages etc.	0.298	***	0.013
Historical & Philosophical Studies	0.322	***	0.009
Creative Arts & Design	0.304	***	0.009
Education	0.476	***	0.015
Combined	0.319	***	0.010
<i>Institution type</i>			
Specialist HE colleges	0.742	***	0.014
Generalist HE colleges	1.002	n.s.	0.012
Post-1992 universities	0.857	***	0.007
Russell Group	0.852	***	0.007
Other pre-1992 universities		(ref)	
<i>Gender</i>			
Male		(ref)	
Female	1.148	***	0.007
<i>Academic year</i>			
2001/02		(ref)	
2002/03	0.946	***	0.008
2003/04	0.967	***	0.008
2004/05	0.854	***	0.007
Model statistics:	$p < 0.001$	pseudo $r^2 = 0.015$	Log likelihood = -387,484.52

- Attending a non-Russell Group⁷¹ old university or a generalist HE college

If the substantive regression model(s) for analysing factors affecting progression to postgraduate study were limited to these ‘complete’ variables alone there would be no need for any weighting adjustments (Gelman and Carlin, 2002). However some of the predictors likely to be included in the model are not complete (e.g. social class), meaning adjustments are needed. The estimated coefficients in this model are all statistically significant. Even if they were not, however, they would still need to be included in the nonresponse model since adjustments which exclude non-significant predictors do not adequately adjust for attrition (Pickles and Brand, 2005). In any case, this is population data, so parsimony is unnecessary.

A common method for adjusting for nonresponse in a situation such as this is poststratification weighting (Bethlehem, 2002; Gelman and Carlin, 2002; Lohr, 1999; Pickles and Brand, 2005).⁷² Poststratification shares many characteristics with design-based survey methods whereby the sampling probability varies across strata (e.g. to ‘over-sample’ a difficult-to-reach or small group) and where posterior inverse-probability weights are applied to adjust estimates. Poststratification simply stratifies on *actual* response probabilities: it is “the use of stratified sample estimators for unstratified designs” (Gelman and Carlin, 2002, p.290). It does, however, involve the strong assumptions that respondents do not differ (in unobserved characteristics) from nonrespondents; and that respondents who match nonrespondents in observed characteristics can therefore be taken

⁷¹ The Russell Group is an organisation representing large research-led universities. It has 20 members which together attract the majority of UK research income. It is usually taken as the closest British equivalent to the US ‘Ivy League’. All Russell Group member institutions became universities before 1964.

⁷² An alternative approach sometimes used to deal with nonresponse in surveys is the sample selection model proposed by Heckman (1979). This essentially fits two models: the first attempts to predict selection into the sample, usually conceived as affected by an unobserved variable; the results of this model are used in a second outcome model, which corrects for bias caused by the omitted (unobserved) variable. This approach was not utilised because ‘Heckman’ models typically involve an outcome model where the dependent variable is continuous (whereas it is binary in this study). Furthermore, the likely relationship between survey nonresponse and progression to postgraduate study is qualitatively different to a classic Heckman scenario, such as voting behaviour (where nonrespondents are probably more likely not to vote).

as representative of their missing peers. As Lohr (1999) counsels, the plausibility of this assumption must be kept in mind during the analysis. Pike (2008), in a review of poststratification weighting as applied to the US National Survey of Student Engagement, argues such weights led in some cases to a reduction in the precision of estimates for individual institutions; essentially removal of bias is traded for decreased precision. He cites other research suggesting the cell size of poststratification classes can be small where there are many predictors of nonresponse and that predictors should not be used simply out of convenience (Kalton, 1983; Oh and Scheuren, 1983; Vartivarian, 2004). However here the size of the dataset and the relatively small number of values possible in the categorical variables included ensures there are no empty classes (excepting age, which is a continuous variable). Further, there is justification for inclusion of each of the variables in the model for nonresponse since each is likely to be an important covariate in considering progression to postgraduate study and social class.

The poststratification method was adopted for the destinations dataset, using a weight equal to the reciprocal of the estimated probability of response for each case as generated by the logistic regression model reported in Table 5.3 above (Lohr, 1999; Pickles and Brand, 2005).⁷³ Since the destinations dataset is population data, the usual choice between population weighting and sample weighting does not apply because the two are identical in this instance. The data thus-weighted can be compared to population data: it represents a very close approximation, as shown in Table 5.4, which focuses on subject of study. In other words, the weights ensure that for each variable where there was complete information, the weighted respondents match the unweighted respondents and nonrespondents very closely when comparing bivariate contingency tables. Figure 5.2 shows that almost all of the weights derived were between 1.0 and 1.5. Alternative models were fitted but rejected on the grounds that they did not provide as good a fit. This

⁷³ NatCen used this method in their analysis of responses to HESA's longitudinal destinations survey (National Centre for Social Research, 2007).

included a model using fewer variables (degree classification and whether the graduate had paid their own tuition fees were omitted). It also included a model where the graduate's age was substituted with the square of their age to account for a possible curvilinear relationship between age and probability of response (since there was some indication that the youngest and oldest graduates were more likely to respond than those between ages 25 and 35). However the model with age-squared proved a worse fit than that with age untransformed and so was disregarded. Models were also fitted which included (a) an interaction term for institution and subject; and (b) an interaction term for subject and age, but almost all the coefficients were not statistically significant and the former model gave a worse fit than its counterpart without the interaction term.⁷⁴

A similar approach – poststratification weighting – was adopted for the online survey dataset. As already explained, except for Gusset and Riverby Universities, no individual data on those in the population was available, hence it was not possible to predict the probability of response on a case-by-case basis. An alternative is to calibrate weights based on known population values (Lohr, 1999; Bethlehem, 2002). A common poststratification variable in nonresponse situations is gender: a weight is applied to cell counts for gender such that the ratio of males to females matches that in the population. This approach can be extended to multivariate poststratification, with the weights set such that cell proportions are identical between the known population values and those achieved in the survey.

The known population values for the online survey dataset are contained in the postgraduate student dataset. The latest available data were used (2004/05); further error is introduced insofar as the postgraduate population for 2006/07 (when the online survey was

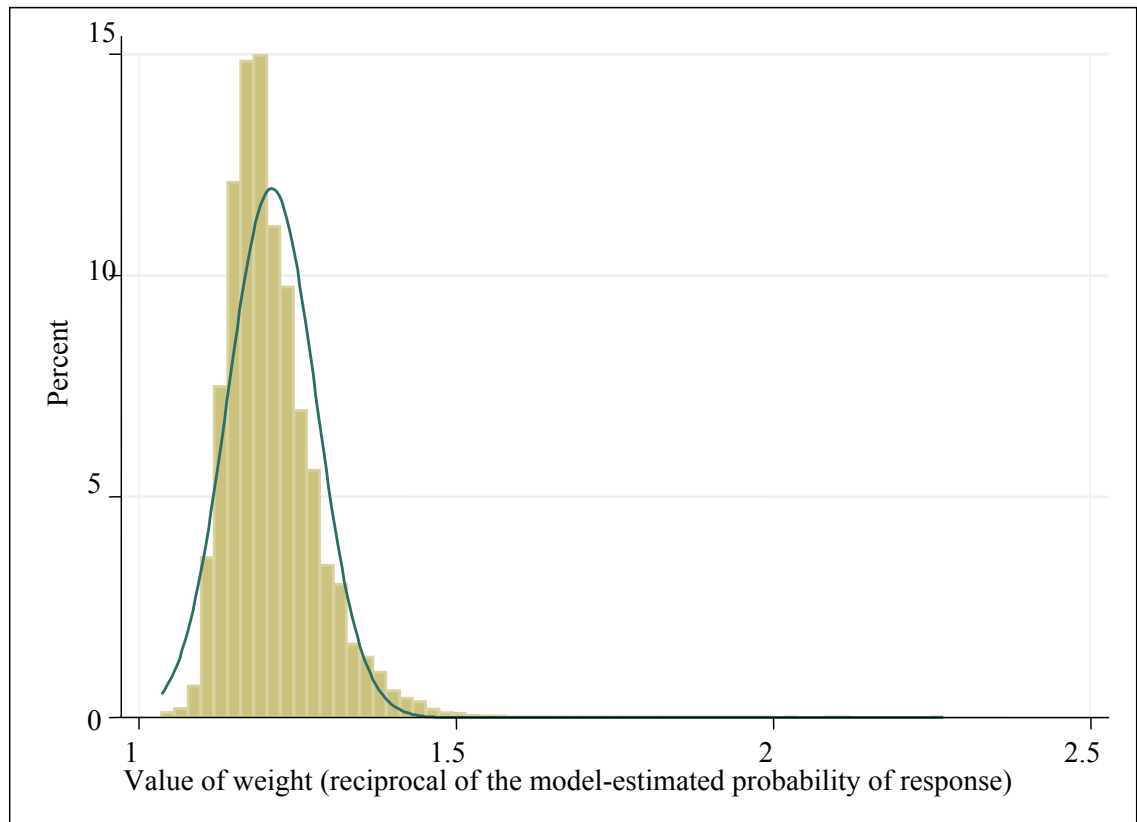
⁷⁴ In principle, institution could be added to as a level 2 unit in a multilevel model for deriving the poststratification weights. In practice I was unable to achieve this in Stata because the format of the data prevented me from specifying an `xtlogit` model. Specifically, there is no individual identifier in the dataset, so a prediction for each 'case' could not be obtained.

Table 5.4: First degree graduates' subject of study 2001/02 – 2004/05 comparing actual, weighted and unweighted DLHE respondents

	Actual (all graduates)		Respondents (weighted)		Respondents (unweighted)	
	N	%	N	%	N	%
All subjects						
Medicine & Dentistry	21,885	2.53	21,890	2.53	19,745	2.74
Subjects Allied to Medicine	61,720	7.12	61,725	7.13	52,220	7.25
Biological Sciences	81,295	9.38	81,270	9.38	68,405	9.50
Agriculture and Veterinary Science	10,030	1.16	10,025	1.16	8,555	1.19
Physical Sciences	43,600	5.03	43,585	5.03	37,290	5.18
Mathematical and Computing Sciences	69,690	8.04	69,675	8.04	57,055	7.93
Engineering	43,175	4.98	43,175	4.98	35,760	4.97
Technology	5,830	0.67	5,835	0.67	4,765	0.66
Architecture, Building & Planning	15,180	1.75	15,185	1.75	12,735	1.77
Social Studies	78,870	9.10	78,850	9.10	64,560	8.97
Law	38,825	4.48	38,805	4.48	32,375	4.50
Business & Administrative Studies	106,650	12.31	106,625	12.31	87,945	12.22
Mass Communications & Documentation	25,145	2.90	25,155	2.90	20,310	2.82
Linguistics, Classics etc.	43,985	5.08	43,985	5.08	36,545	5.08
European Languages etc.	15,915	1.84	15,910	1.84	13,355	1.85
Non-European Languages etc.	5,850	0.68	5,850	0.68	4,815	0.67
Historical & Philosophical Studies	46,080	5.32	46,085	5.32	38,105	5.29
Creative Arts & Design	93,310	10.77	93,360	10.78	75,020	10.42
Education	34,610	3.99	34,590	3.99	30,045	4.17
Combined	24,695	2.85	24,690	2.85	20,320	2.82
Total	866,325	100.00	866,275	100.00	719,925	100.00

Source: FDS 2001/02; DLHE 2004/05

Figure 5.2: Histogram showing distribution of derived poststratification weights for the destinations dataset



undertaken) will not match exactly that of 2004/05.⁷⁵ Two sets of weights were derived. The first set comprised separate weights for each institution. As explained in Chapter 4, the aim of the online survey was not to provide reliable estimates for UK population values on the social class background of postgraduate students, but rather to allow a comparative case-based approach using different kinds of higher education institution. However a second set of weights was also derived, ignoring institution and instead calibrating poststratification weights for the whole sample based on the total postgraduate population for 2004/05. This second set of weights can be used to give overall estimates for the UK postgraduate population, albeit estimates which should be treated with much caution. The analyses presented in Chapters 7 and 8 use whole-sample poststratification weights except

⁷⁵ It is possible to obtain statistics on UK-domiciled postgraduate students for 2006/07 disaggregated by gender and mode of study but not by the categories of qualification aim (specifically PGCE) I use in my analysis.

Table 5.5: Worked example of poststratification weighting using online survey data for Dibley City University.

(a) responses via online survey

Qualification type	Full-time		Part-time		Total
	Male	Female	Male	Female	
Higher degree by research	13	21	23	28	85
Taught higher degree	32	31	45	78	186
Other postgraduate qualification	2	4	9	33	48
PGCE	12	13	1	3	29
<i>Total</i>	<i>59</i>	<i>69</i>	<i>78</i>	<i>142</i>	<i>348</i>

(b) HESA postgraduate record 2004/05

Qualification type	Full-time		Part-time		Total
	Male	Female	Male	Female	
Higher degree by research	15	15	40	45	120
Taught higher degree	210	220	540	1,240	2,210
Other postgraduate qualification	5	10	155	430	595
PGCE	115	290	0	15	420
<i>Total</i>	<i>345</i>	<i>535</i>	<i>735</i>	<i>1,730</i>	<i>3,350</i>

(c) derived weights^a

Qualification type	Full-time		Part-time	
	Male	Female	Male	Female
Higher degree by research	0.136	0.084	0.190	0.171
Taught higher degree	0.675	0.734	1.247	1.653
Other postgraduate qualification	0.312	0.208	1.767	1.354
PGCE	1.004	2.334	0.000	0.485

(d) Weighted survey results (round to nearest integer)

Qualification type	Full-time		Part-time		Total
	Male	Female	Male	Female	
Higher degree by research	2	2	4	5	13
Taught higher degree	22	23	56	129	229
Other postgraduate qualification	1	1	16	45	62
PGCE	12	30	0	1	44
<i>Total</i>	<i>36</i>	<i>56</i>	<i>76</i>	<i>180</i>	<i>348</i>

Note:

^aWeights are based on unrounded values.

where the analysis includes institution, when the separate weights for each institution are used.

Candidate variables for inclusion in the poststrata were gender, mode of study (full-time/part-time), qualification type and subject group. The latter was dropped on the grounds that, even with multiple collapsing of subject groupings (from 190 to 20 and then to five categories), there remained many small cell counts and empty cells. A worked example of derivation of weights for Dibley City University is given in Table 5.5. The formula for derivation of weights is:

$$\frac{\text{Survey cell count}}{\text{Survey grand total}} \div \frac{\text{Population cell count}}{\text{Population grand total}}$$

What substantive difference do the weights make to analyses of relevance to the research questions? Given the respective prevalence of nonresponse between the destinations and online survey datasets, it is not surprising the corrections have a greater impact on the latter. Table 5.6 shows that application of weights shows only a very small shift in the proportions proceeding to postgraduate study in comparison with a complete case analysis of responders only. For the online survey dataset, there are of course substantial shifts in the composition of the sample by the poststratification variables of gender, mode of study and especially qualification type; but others – including subject of study – do not show much difference between the weighted and unweighted datasets.

Table 5.6: Comparison of rates of progression to postgraduate study for full-time first-degree graduates 2001/02 – 2004/05 using weighted and unweighted destinations data

Destination	Unweighted data (complete case analysis)	Weighted data
Progress to postgraduate study	0.149	0.148
Progress to postgraduate research degree	0.021	0.020
Progress to taught postgraduate degree	0.068	0.067
Progress to PGCE	0.030	0.030

Sources: FDS 2001/02; DLHE 2004/05

Missing social class data

Having dealt with unit nonresponse in the datasets, there remains an issue with item nonresponse, particularly social class and related variables. Social class missingness was 11% in the online survey dataset. The item nonresponse mechanism for this dataset was essentially MAR. Social class was more likely to be missing for older postgraduates, usually because their parents were deceased or they had retired and no prior occupational group was stated. Given the low prevalence of nonresponse however, this can be considered an essentially random element and in any case is unlikely to materially affect conclusions.⁷⁶ Listwise deletion is therefore preferred. Social class data is not present for about 27% of cases in the destinations dataset, a great improvement on the 68% item nonresponse reported by Wakeling (2005a) for 1999/2000 data. To further complicate matters, 14% of the nonmissing cases have a social class value of ‘Not classified’,⁷⁷ giving a full 36% of weighted cases which are missing social class data. It is virtually impossible to determine empirically whether social class is MAR or NMAR in the dataset: there are no suitable alternative data sources available to validate the social class distribution of first-degree graduates.⁷⁸

Whether or not social class is missing could plausibly be influenced by social class background itself. This is because students who have not entered via the UCAS scheme (themselves usually mature students entering new universities late in the academic year) are highly unlikely to have their social class recorded and one would expect them to be disproportionately from NS-SEC classes 3 to 8. Research, now very dated, which sought to independently validate the assigned class background of UCCA applicants found “a

⁷⁶ With a much larger sample this assumption would be unsafe because of differential class mortality and morbidity rates.

⁷⁷ The likely difference between these ‘Not classified’ values and those which are system-missing is that the former were missing from the UCAS application form whereas the latter have either gone missing through data error or have not been collected for non-UCAS entrants.

⁷⁸ See the discussion of government survey data in Chapter 4.

praiseworthy degree of accuracy” overall but that those with unknown social class had a lower social class background than the average and that the academic profile of those with unknown social class was similar to those from Registrar General Social Class V (Rudd, 1987). This finding is replicated in the destinations dataset, where the degree classification profile of those with unknown social class is similar to that for graduates from NS-SEC classes 5 to 7.⁷⁹ More recent research specifically investigating unknown social class in UCAS data found around two-thirds of this group had provided information but this had not been categorised by UCAS, sometimes due to problems with the text entered on the application form, but sometimes for reasons which were not apparent to the researchers. The researchers coded these cases using NS-SEC and found they closely matched the overall social class profile of non-missing cases (i.e. they were MCAR). The remaining one-third of cases had either provided insufficient information, explained that their parents were not working or had not completed the appropriate section on the application form. Further investigation of this unclassified group showed they resided in areas of high deprivation and unemployment (Harrison and Hatt, forthcoming). However the researchers also point out that there has been a recent increase in the proportion of cases with unknown social class in UCAS data, from 10% to 26% in the decade to 2007/08. As my data covers students who would have entered via UCAS in approximately 1999 – 2003 these issues may not have affected the destinations dataset so severely.

Another plausible mechanism for item nonresponse relates to institutional administrative practices. There is substantial variation in the rate of social class missingness by institution (the range is 0.1% to 100%⁸⁰ missing; standard deviation = 27.3%). Institution type seems to influence this: the rate of missingness at pre-1992

⁷⁹ This could simply indicate that inability or disinclination to properly complete forms – rather than social class - is associated with poorer performance at university. Interestingly, there is little difference in the degree classification profiles of those who entered via UCAS with social class recorded as ‘Not classified’ and those who have no value recorded at all for social class.

⁸⁰ The following institutions provided no information on social class background in the destinations dataset: Royal College of Music (200 graduates); Royal Northern College of Music (300 graduates); Scottish Agricultural College (465); Birkbeck College (30) and the Institute of Education (15) (both University of London); Conservatoire for Dance and Drama (385).

universities is less than 25%, but at specialist HE colleges it is more than 40%. The latter group may have fewer resources to devote to statutory statistical returns than the former. If the missing data mechanism is related to administrative practice, it can be considered MAR and thus ignorable. The social class profile will be affected by the missingness, but the missingness is essentially affected by the covariates (institution type and its correlates) and not by the value of social class itself.

Where there is item nonresponse, statistics texts generally advise some form of imputation. Multiple imputation is usually favoured (Allison, 2002; Carpenter & Kenward, 2005; Lohr, 1999). This technique involves using a model containing observed values to impute missing values, creating a series of complete datasets which together contain a range of plausible values for the missing item. These plausible values are then combined using a standard procedure which relies on Bayesian principles to fill in the missing values. Multiple imputation is typically more difficult with categorical data; however the ‘multiple imputation using chained equations’ (MICE) procedure implemented in Stata by Royston (2004, 2005) provides a potential solution.⁸¹

There are many problems with multiple imputation procedures. The literature remains underdeveloped with much of the software written by statistician-enthusiasts rather than coming as standard with the leading statistical software packages (Allison, 2002; PEAS, 2006).⁸² Much of the implementation of multiple imputation has been in medical research to impute continuous or binary variables, where procedures seem better developed. In some implementations, including that for Stata used here, the statistical theory in support of procedures is weak (Carpenter and Kenward, 2005). Comparison of an example regression analysis of the probability of proceeding to taught postgraduate study by social class, gender, subject group and institution type using complete cases only and

⁸¹ Further detail on multiple imputation procedures attempted is given in Appendix 7.

⁸² The latter source disputes Carpenter and Kenward’s (2005) assertion that multiple imputation is “currently the only practical, generally applicable, approach (to missing data) for substantial data sets”, commenting “having struggled to make imputation work correctly [...] with various packages, I am not sure I would agree [...]. Like much applied statistics imputation seems to be as much an art as a science.”

the combined imputed dataset showed a small reduction in standard errors but no substantive differences in the direction of estimated effects. Furthermore, adopting the three-class NS-SEC schema loses information since the coefficients are reported as non-significant, in comparison to a model using the eight-class schema where social class is a significant predictor of progression to taught postgraduate study (except for classes 4 and 7). Retaining the seven-class⁸³ schema is important in addressing the research questions because of the differences between elements of the service-class in their mobility strategies.

Table 5.7: Proportion of full-time UK-domiciled first-degree graduates 2001/02 – 2004/05 progressing to postgraduate study by social class and type of study (weighted)⁸⁴

Social class	Taught higher degree	Research degree	PGCE
1 Higher managerial and professional occupations	0.084	0.031	0.027
2 Lower managerial and professional occupations	0.073	0.025	0.032
3 Intermediate occupations	0.069	0.021	0.036
4 Small employers and own account workers	0.066	0.008	0.042
5 Lower supervisory and technical occupations	0.064	0.023	0.037
6 Semi-routine occupations	0.064	0.021	0.037
7 Routine occupations	0.060	0.016	0.041
<i>Total (known social class only)</i>	<i>0.072</i>	<i>0.024</i>	<i>0.033</i>
Not classified (by UCAS)	0.055	0.009	0.029
Missing	0.060	0.014	0.024
Class 1 (assuming all missing are Class 1)	0.064	0.017	0.026
Class 7 (assuming all missing are Class 7)	0.058	0.013	0.026
<i>Total (all graduates)</i>	<i>0.067</i>	<i>0.020</i>	<i>0.030</i>

Sources: FDS/2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05.

⁸³ Social class was recorded using the NS-SEC eight-class schema (with Registrar General's Social Class transposed to NS-SEC as described in Appendix 6). Only 92 (0.02%) cases are attributed to NS-SEC Class 8, 'Never worked and long-term unemployed'. Members of this category are excluded from this and subsequent analyses.

⁸⁴ I compiled Table 5.7 using unweighted data too, but found no substantive differences.

Having thus found multiple imputation an unsatisfactory solution, analysis will proceed by excluding cases missing social class, weighting complete cases to adjust for unit nonresponse. A common compromise is to undertake a sensitivity analysis which assumes that all missing values belong to one category: in this case one could assume they were all 'really' from NS-SEC group 1 *or* group 7. That is perhaps implausible as a meaningful assumption, not least because only a part of the missingness mechanism is down to item nonresponse by the individual student (as opposed to administrative error). However, it is a worthwhile exercise in respect of rates of progression to various kinds of postgraduate study by social class.

Table 5.7 presents progression rates to postgraduate study with cases missing social class separately classified. It shows that progression rates to taught higher degrees decline monotonically by social class but that something close to the opposite pertains to progression to PGCE. Those with missing social class data have the lowest rates of progression to a higher degree and (almost) to PGCE. If it is assumed that all of the missing cases should have been assigned to Class 1, the effect is to depress its progression rates to higher degree, although there is little change to PGCE progression. Similarly, assuming all the missing cases are in actual fact from Class 7 reduces the progression rate to higher degree, although somewhat less dramatically. There is a larger reduction in PGCE progression for this group. As those with missing social class are less likely to proceed to postgraduate study, were they to be included the overall rates of progression to postgraduate study would be reduced. This is interesting, but less relevant for the research questions than the relative rates of progression between social classes. One might surmise that those with missing social class are more likely to be from NS-SEC Classes 5, 6 and 7, due to their lower rate of progression. However it is unlikely that all those missing social class data could be so attributed, because this would seriously inflate the overall proportion of graduates from those classes, against the weight of evidence. A tentative conclusion

then is that the proportion of graduates from lower NS-SEC groups progressing to postgraduate study could be overestimated if cases with social class missing are ignored.

Conclusion

This chapter has addressed the danger that failure to adjust for the known structure and shortcomings of the research datasets could distort results and hence generate inaccurate conclusions. Postgraduates are distributed across subjects and institutions in a manner which diverges substantially from undergraduates. There are further differences between types of postgraduate, such as research students, taught masters students and those taking a PGCE. Data is missing in all three datasets, with both unit and item nonresponse and this missingness has implications for analysis and interpretation of results. An extended discussion of these problems is justified because the complexities of postgraduate education are implicated in the patterns of social class dis/advantage seen at earlier levels of the education system: ignoring them potentially leads to false conclusions, an accusation levelled at many previous studies in this area. Furthermore, missing data and nonresponse affect the datasets analysed in critical ways which needed to be very carefully described and dealt with. The application of techniques to adjust for missingness and nonresponse goes some way to mitigating these shortcomings; awareness of the type and extent of error which may remain puts subsequent analyses on a firmer footing.

Literature on causes of nonresponse in student and online surveys was reviewed and patterns of missingness in the three datasets investigated. It was shown that missing data is of little significance in the dataset about postgraduate students, which is (in principle) without unit nonresponse and with a very low degree of item nonresponse. The destinations dataset has around 17% unit nonresponse. Although this is comparatively low, data is not missing completely at random, meaning using only cases where a graduate has

responded to the survey could misrepresent the relationship between key covariates. The online survey saw much higher levels of nonresponse and attracts the same verdict. In the latter dataset, the responses could be considered missing at random. This assumption has also been made about the destinations dataset, although it is less robust because responses in the DLHE survey *could* depend on whether a graduate was employed, studying or unemployed; unfortunately there is no way of confirming this empirically. In any case, the high response rate limits the potential bias introduced if responses are not missing at random.

Poststratification weighting, a common strategy for adjusting for nonresponse, was applied to the online survey and destinations datasets. The latter used a model-based approach to predicting nonresponse probabilities, whereas the former relied on aggregate information about the population in the absence of microdata on those in the sampling frame. The weighted data were shown to adjust for nonresponse bias, although in common with other techniques for dealing with missing data, this means assuming that respondents can ‘stand in’ for nonrespondents with whom they share characteristics.

Finally, item nonresponse in the destinations dataset was reviewed for the key variable of social class. About 37% of cases were missing social class data, some through nonresponse at the UCAS application stage, others because their undergraduate institution had not recorded this data. Multiple imputation, the approach recommended by some missing data experts, was considered as a means of adjusting for missing social class, but rejected on theoretical and practical grounds. A sensitivity analysis of the destinations dataset concluded that progression rates to postgraduate study could be overestimated for those from lower social class backgrounds.

Chapters 4 and 5 have described the research datasets, showing how they have been derived; why they are the most appropriate for addressing the research question within the practical constraints of a doctoral project; and how they have been adjusted to alleviate

problems of unit and item nonresponse. In the course of this analysis, it has been shown that postgraduate study is structured by subject discipline, institution and qualification type and that there is *prima facie* evidence for differential progression rates from first degrees to postgraduate study by social class. It is to the further investigation of these tendencies that the next chapter turns.

6 Social class and progression to postgraduate study

Introduction

This thesis asks whether there are social class differences in participation in postgraduate study; if so, whether these might be accounted for by factors other than social class; and what, if any, the implications might be for sociological theory and education policy. Chapter 4 described the data which will be used to examine these questions and explained that two main groups will be studied: first-degree graduates progressing to postgraduate study (the destinations dataset); and current postgraduate students at a sample of institutions (the online survey dataset). Chapter 5 then described patterns of missingness in the datasets and reported on adjustments made to mitigate the effects of this, concluding with a brief examination of the relationship between social class and progression to postgraduate study. In this chapter I will investigate in detail patterns of progression to postgraduate study by social class and their relationship with other pertinent factors.

At the aggregate level, Chapter 5 (and specifically Table 5.7) showed an apparent association between social class and progression to postgraduate study as a ‘first destination’. Graduates from NS-SEC Class 1⁸⁵ advance to higher degrees at a greater rate than those from all other social classes; entry rates to postgraduate initial teacher training show the opposite effect. To unpack this finding I will first examine trends across time, gender and age and investigate the combination of paid work and postgraduate study.

⁸⁵ Henceforth, references to ‘Class 1’, ‘Class 2’ and so on will mean the appropriate grouping from the NS-SEC eight-class schema. In full, this is:

1. Higher managerial and professional occupations
2. Lower managerial and professional occupations
3. Intermediate occupations
4. Small employers and own account workers
5. Lower supervisory and technical occupations
6. Semi-routine occupations
7. Routine occupations
8. Never worked and long-term unemployed [excluded from the analysis, see Chapter 5]

Classes 1 and 2 are often conflated to the ‘salarariat’ (or in Goldthorpe’s scheme, ‘the service class’). I do not follow this convention as intra-salarariat differences are theoretically and empirically pertinent in this research.

Secondly, I will consider potential intervening factors which might mitigate or entirely account for the ostensible direct effect of social class. There are a number of candidate intervening factors. These include alternative socio-economic measures, such as whether a student was responsible for paying his/her undergraduate tuition fees (a proxy for parental/own income) or whether s/he attended a state or private school. They also include academic factors, which were shown in Chapter 3 to be important mediators of the relationship between social class and educational attainment and progression. Specifically, the factors to be investigated will be academic attainment at first-degree level; subject of study; and institution attended at first degree level.

It will become apparent that the association between social class and access to postgraduate study reduces substantially when a third variable is introduced. On the face of it, this suggests that background effects do decline at postgraduate level, or at least in the immediate undergraduate to postgraduate transition. Multivariate statistical modelling, which will be undertaken in the next chapter, will help isolate the potential 'direct' contribution of social class once the effect of other variables has been accounted for. However there will remain space for sociological *judgement* regarding the process of progression to postgraduate study and the place of social class within it. If the effect of social class is mediated by the type of institution attended, such that the social classes are 'sorted' into different kinds of institution from which there is differential progression to postgraduate study, then it is difficult to determine from a cross-sectional statistical analysis alone whether the effect of social class is crucial or merely accidental. One might consider that inequality is *not* maximally maintained if there is little additional class disadvantage in progression to postgraduate study. On the other hand, if postgraduate opportunity is structured by first-degree institution, this could suggest effectively maintained inequality.

Social class and rates of progression to postgraduate study

In the previous chapter, Table 5.7 showed the aggregated rates of progression to higher degrees and PGCEs for 2001/02 – 2004/05, indicating clear social class differences in progression rates. Further detail is required about these rates of progression however to:

- (a) establish that they are not an artefactual effect of amalgamating academic years;
- (b) explore possible differences by gender, age and work/study patterns; and
- (c) reflect on the magnitude of social class differences – that is, are they consequential or relatively minor?

Figures 6.1 – 6.4 show trends in progression rates to research degrees, taught higher degrees and PGCEs respectively by social class for the years 2001/02 – 2004/05.⁸⁶ In general, these figures show that the patterns observed for the aggregated data are indeed consistent across time. For higher degrees, Classes 1 and 2 have higher progression rates than classes 6 and 7, with the inverse applying to PGCEs. The progression rate to higher degrees declines across time for all classes, but the class relativities do not shift markedly, although there is evidently an element of volatility from year-to-year in progression rates for individual social classes. For other postgraduate courses⁸⁷ there is less of a clear-cut pattern. Although Class 1 graduates are consistently more likely to make this transition than their peers from other social classes, Class 7 graduates often progress ahead of those from Classes 2, 3, 5 and 6.⁸⁸

⁸⁶ The y axis scales in Figures 6.1 – 6.4 vary. They have been set to maximise legibility and to emphasise differences across social classes. The graphs should not therefore be compared directly as the rates of progression to the four varieties of postgraduate study differ considerably. The proportion of graduates progressing to a research degree, for instance, is about one in 40; for a taught higher degree, about one in fourteen.

⁸⁷ 'Other postgraduate courses' include postgraduate diplomas and certificates (apart from the PGCE), private study or another first degree. Trend lines have been smoothed in all four figures to aid legibility.

⁸⁸ Results for Class 4 Small employers and own account workers are especially liable to fluctuation because (i) the number of graduates assigned to this class is small; and (ii) transposition of Registrar General Social

Figure 6.1: Rate of progression of first-degree graduates to research degree study, 2001/02 – 2004/05

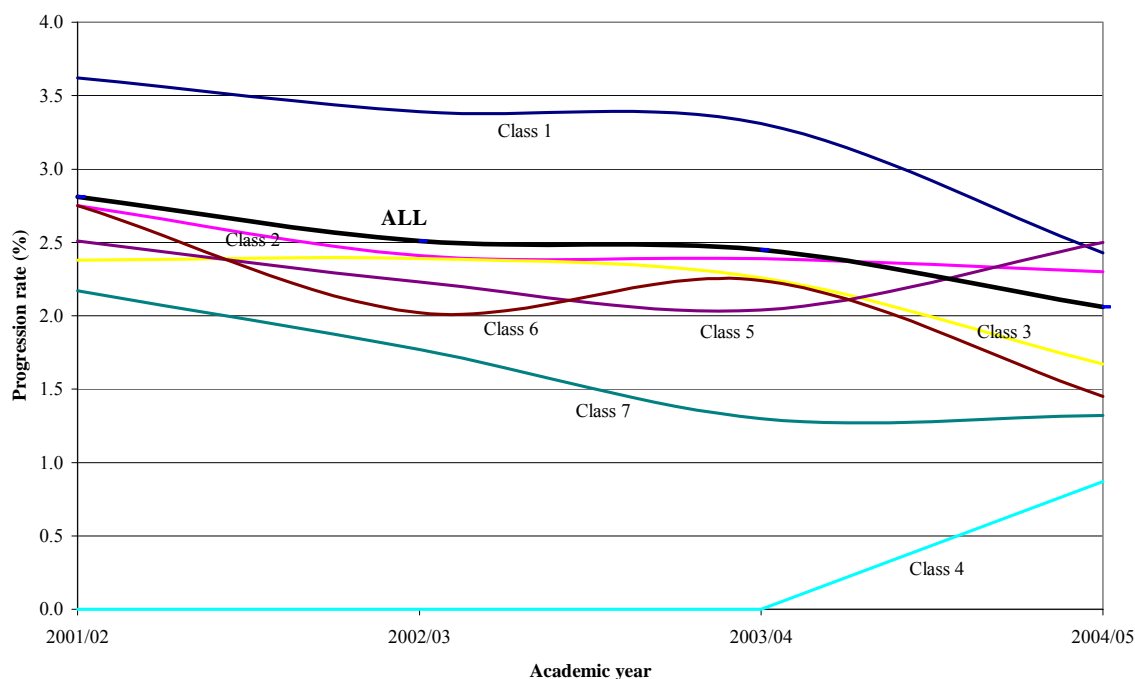
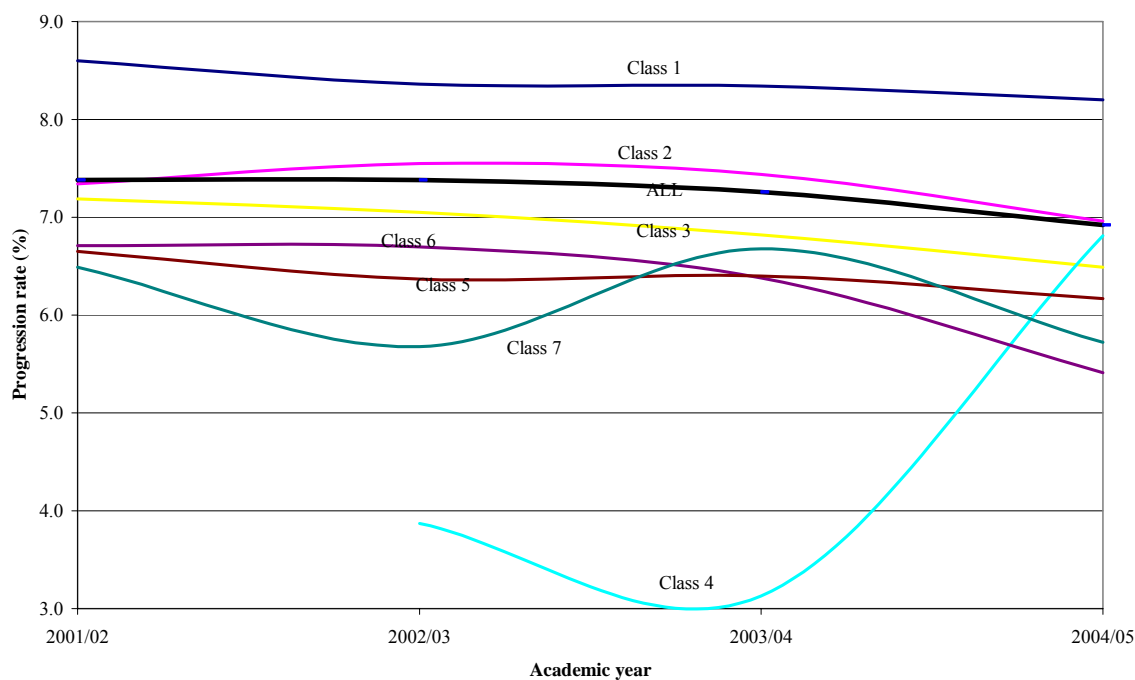


Figure 6.2: Rate of progression of first-degree graduates to taught higher degree study, 2001/02 – 2004/05



Class to the NS-SEC scheme is not possible for Class 4 (accounting for the absence of any cases for this Class in some years). It may also reflect the known distinctiveness of the self-employed, such as greater occupational inheritance and cultural traditions which differ from those in otherwise similar material circumstances (e.g. Scase and Goffee, 1982).

Figure 6.3: Rate of progression of first-degree graduates to PGCE courses, 2001/02 – 2004/05

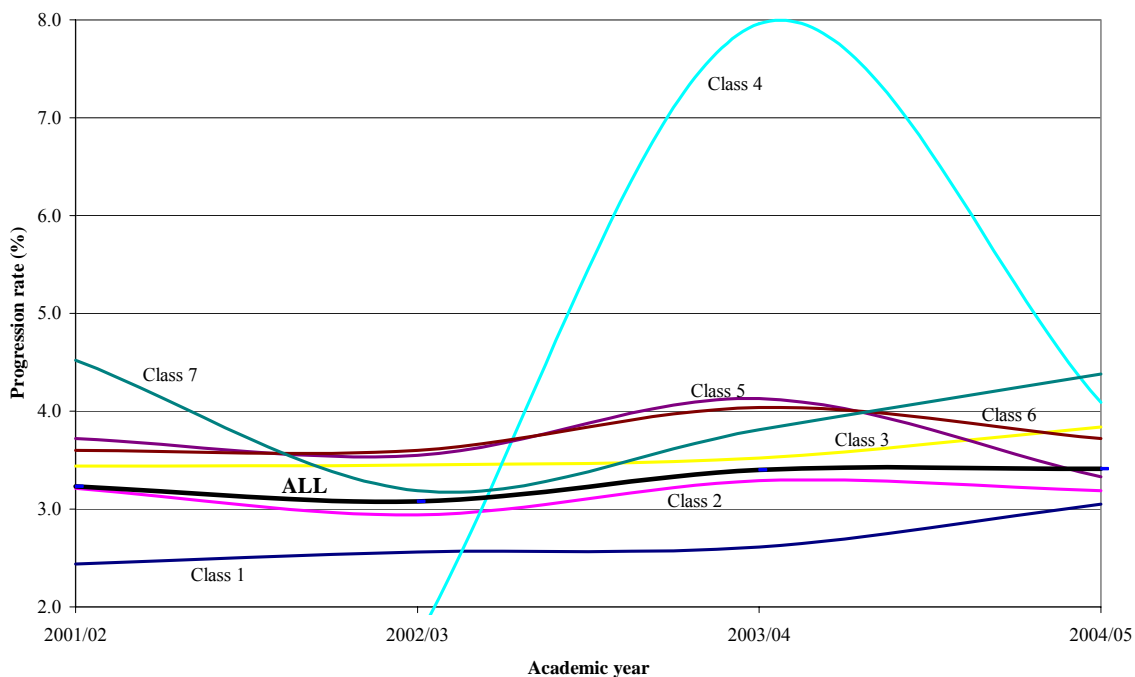
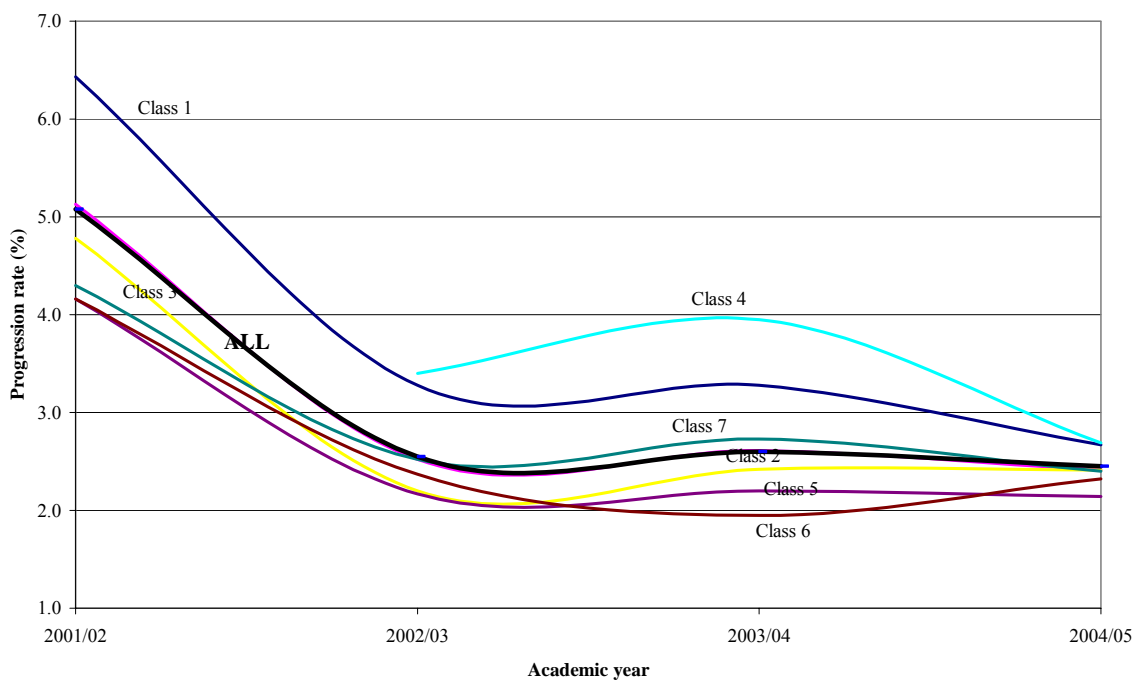


Figure 6.4: Rate of progression of first-degree graduates to other postgraduate courses, 2001/02 – 2004/05



Sources for figures 6.1 – 6.4: FDS 2001/02; DLHE 2002/03 – 2004/05; Student Record 2001/02 – 2004/05

Turning to gender differences, Table 6.1⁸⁹ shows progression rates to postgraduate study and other graduate outcomes by gender and social class. Men progress to research degrees at approximately twice the rate of women. They are also more likely to advance to taught higher degrees, although the difference is smaller. As is well known given the gender balance of the teaching profession (Chevalier and Dolton, 2005; Purcell *et al*, 2006), women are over two-and-a-half times more likely as men to enter a PGCE programme directly following a first degree. Women are also more likely to take ‘other’ postgraduate study. However there is only one percentage point difference in men’s and women’s rate of entry to any kind of postgraduate study across the period (15.5% and 16.5% respectively).⁹⁰ However, within each gender the social class relativities remain. So although men from Class 7 are more likely to progress to a taught higher degree than women from Classes 2 to 7, they are also less likely to do so than men from Classes 1 to 6. Similarly, women from Class 1 are less likely to advance to a research degree than men from Classes 1, 2, 3, 5 and 6, but more likely than women from any other social class. A comparable pattern is seen for other postgraduate study. For PGCEs there is also a clear social class pattern within gender, but here the order is inverted.

These progression patterns – clear gender differences alongside within-gender social class hierarchies – are interesting because of the different social mobility trajectories and social class profiles of men and women. For instance, historically the teaching profession has tended to attract upwardly mobile women as well as daughters of service-class fathers; whereas upwardly mobile men and sons of service-class fathers were more likely to enter the higher professions (Crompton and Sanderson, 1990). One interpretation

⁸⁹ The main tables in this chapter were subjected to a sensitivity analysis whereby attrition weights were not applied and ‘unknown’ values were assigned to Classes 6 and 7. No substantive discrepancies were evident.

⁹⁰ Slightly more women than men enter full-time employment as a first destination, but the gender difference in unemployment is larger, with men 1.76 times more likely to report this state after graduation. It is *possible* that women who would have been unemployed have entered taught postgraduate study instead but equally men’s higher unemployment could be associated with other factors such as lower academic attainment, subject distribution etc.

Table 6.1: Rate of progression to postgraduate study and other first destinations of UK-domiciled first-degree graduates, 2001/02 – 2004/05 by social class and gender

Social class	Research degree	Taught higher degree	PGCE	Other PG courses	Full-time employment	Assumed unemployed	Other ^a	N
<i>(a) Men</i>								
1 Higher managerial and professional occupations	0.039	0.089	0.014	0.034	0.506	0.077	0.241	48,840
2 Lower managerial and professional occupations	0.033	0.081	0.016	0.025	0.538	0.078	0.229	102,780
3 Intermediate occupations	0.029	0.078	0.019	0.023	0.536	0.083	0.232	30,335
4 Small employers and own account workers	0.010	0.076	0.019	0.020	0.512	0.092	0.271	3,360
5 Lower supervisory and technical occupations	0.032	0.072	0.020	0.023	0.547	0.090	0.216	31,175
6 Semi-routine occupations	0.030	0.073	0.020	0.022	0.531	0.096	0.228	18,175
7 Routine occupations	0.021	0.070	0.026	0.021	0.516	0.113	0.233	5,555
<i>Total</i>	<i>0.033</i>	<i>0.080</i>	<i>0.017</i>	<i>0.026</i>	<i>0.531</i>	<i>0.082</i>	<i>0.231</i>	<i>240,215</i>
<i>(b) Women</i>								
1 Higher managerial and professional occupations	0.024	0.079	0.039	0.041	0.523	0.043	0.251	55,025
2 Lower managerial and professional occupations	0.019	0.068	0.043	0.037	0.553	0.044	0.236	131,350
3 Intermediate occupations	0.016	0.062	0.048	0.034	0.549	0.051	0.240	42,165
4 Small employers and own account workers	0.007	0.059	0.058	0.033	0.523	0.053	0.267	4,995
5 Lower supervisory and technical occupations	0.016	0.058	0.051	0.031	0.571	0.049	0.224	39,225
6 Semi-routine occupations	0.014	0.057	0.050	0.030	0.55	0.0550	0.244	25,340
7 Routine occupations	0.011	0.052	0.053	0.034	0.525	0.062	0.263	6,985
<i>Total</i>	<i>0.018</i>	<i>0.066</i>	<i>0.045</i>	<i>0.036</i>	<i>0.548</i>	<i>0.047</i>	<i>0.240</i>	<i>305,085</i>

Notes:

^a Includes part-time employment, not available for work or training, voluntary work.

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

of the progression patterns based on this observation is that where men or women are entering a profession not traditionally associated with their gender then class differences will be greater. Class differences between men entering PGCEs and women research degrees are greater than for women and men entering the respective courses.⁹¹

However there is a measurement issue which confounds the analysis. Since NS-SEC is based on the 'head of household' model whereby UCAS codes applicants according to the parent/guardian with the 'highest' social class, much relevant detail is missed. Does fathers' class exert a stronger influence than mothers' on sons' and daughters' progression to postgraduate study? Do homogamous couples' offspring progress differently to those of heterogamous couples, for instance?⁹²

Although there is little social class difference in full-time employment as a first destination, there are class differences in unemployment rates. Within gender, the sum of the 'Taught higher degree', 'Other postgraduate courses' and 'Assumed unemployed' columns are quite similar across the social classes, suggesting some of the 'extra' taught higher degree students for the higher social classes continued their studies as a preferable alternative to unemployment. There is thus some support for Bedard and Herman's (2008) finding that enrolment in PhD and masters programmes in the USA is affected by the business cycle as it declines when unemployment is lower. However unlike the American case, this trend does not appear to be limited to men alone. The hypothesis would need to be subject to a much fuller investigation to be confirmed.

Table 6.2 expresses the progression rates to the four postgraduate outcomes as odds ratios. These re-affirm the consistency of the class differentials in progression to postgraduate study within gender. They also make clear that class differences are more marked for progression to a research degree (especially for women), among women for taught higher degrees and among men to a PGCE or other postgraduate qualification.

⁹¹ Although see the note in Chapter 7 about interaction effects.

⁹² I return to the issue of 'family' as opposed to 'head of household' social class in Chapter 8.

However it is also clear that some of the social class differences are relatively minor or unremarkable, particularly among men for taught higher degrees, (and among women for other postgraduate qualifications). The largest differential shown by the odds ratios here is that the odds of a man from Class 1 proceeding to taught higher degree study are $1 \div 0.78 = 1.28$ times higher than a man from Class 7. In contrast, the odds ratio for Classes 1/2/3 and 4/5/6/7 in initial entry to higher education is 3.20 (source: my calculation from Kelly and Cook, 2007, p. 27, Table 8). To summarise then, there are clear differences in rates of progression to postgraduate study by gender, but these are additional to social class differences. Class differentials remain when controlling for gender.

Whilst on the face of it social class differences in progression are less marked than for initial entry to higher education, this may hide variations in how postgraduate qualifications are studied (full-time or part-time) and whether they are combined with employment. Although it cannot be assumed that full-time study is necessarily preferable to part-time study, nor that employment is always detrimental to successful academic outcomes, there is nevertheless evidence to suggest that completion of research degrees is less likely for part-timers (HEFCE, 2005b, 2007) and that, at undergraduate level at least, concurrent full-time study and part-time employment has a depressive effect on degree classification (Brennan *et al*, 2005). Among those graduates proceeding to postgraduate study, the data show that in Classes 1 and 2 respectively, 92.4% and 91.5% study full-time, compared to 88.0% and 89.5% in Classes 6 and 7. In general, those progressing to full-time research degrees were less likely to be working at the same time than those progressing to full-time taught higher degrees (7.8% against 19.8% respectively). There was no consistent pattern across social class for research degrees but cross-class differences were greater for those taking taught higher degrees (see Figure 6.5).⁹³. Looking

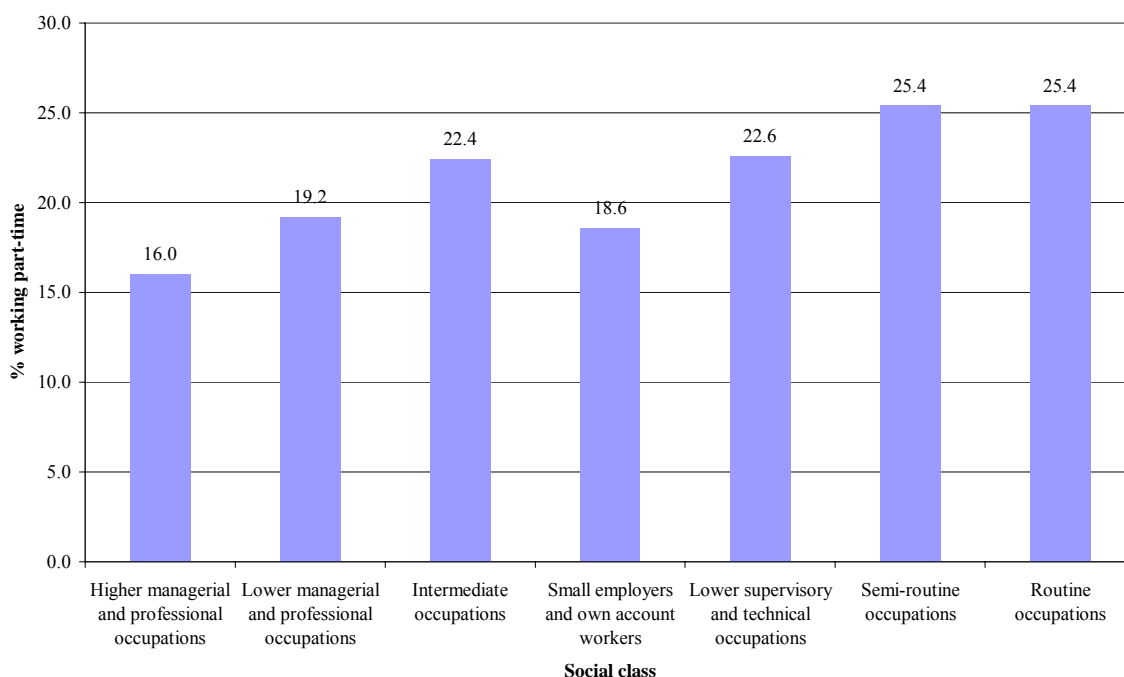
⁹³ Figures exclude 2001/02 – mode of further study was not collected in the First Destinations Survey.

Table 6.2: Odds ratios for progression to postgraduate study by social class and gender, 2001/02 – 2004/05

Social class	Gender	
	Men	Women
<i>(a) Research degree</i>		
1 Higher managerial and professional occupations	(reference)	
2 Lower managerial and professional occupations	0.83	0.77
3 Intermediate occupations	0.72	0.67
4 Small employers and own account workers	0.26	0.27
5 Lower supervisory and technical occupations	0.80	0.68
6 Semi-routine occupations	0.76	0.57
7 Routine occupations	0.53	0.46
<i>(b) Taught higher degree</i>		
1 Higher managerial and professional occupations	(reference)	
2 Lower managerial and professional occupations	0.90	0.85
3 Intermediate occupations	0.87	0.77
4 Small employers and own account workers	0.84	0.73
5 Lower supervisory and technical occupations	0.79	0.72
6 Semi-routine occupations	0.81	0.71
7 Routine occupations	0.78	0.64
<i>(c) PGCE</i>		
1 Higher managerial and professional occupations	(reference)	
2 Lower managerial and professional occupations	1.19	1.12
3 Intermediate occupations	1.41	1.24
4 Small employers and own account workers	1.41	1.51
5 Lower supervisory and technical occupations	1.44	1.33
6 Semi-routine occupations	1.47	1.29
7 Routine occupations	1.93	1.37
<i>(d) Other postgraduate courses</i>		
1 Higher managerial and professional occupations	(reference)	
2 Lower managerial and professional occupations	0.73	0.90
3 Intermediate occupations	0.67	0.81
4 Small employers and own account workers	0.58	0.80
5 Lower supervisory and technical occupations	0.67	0.75
6 Semi-routine occupations	0.65	0.72
7 Routine occupations	0.61	0.81

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

Figure 6.5: Percentage of graduates progressing to full-time taught higher degree study who were concurrently employed part-time, 2002/03 – 2004/05



Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

at odds ratios for Class 1 and Class 7, for full-time research degree study Class 7 graduates are only 1.1 times more likely to be working part-time too, but for taught higher degree study they are 1.8 times more likely. This *might* indicate better access to financial resources (to cover tuition fees and living costs) for those from higher social class groups. Whilst there are a range of funding opportunities for full-time research degree study, masters students typically support themselves, there being few studentships available.⁹⁴ Supporting this contention, those who were liable to pay their own tuition fees at first-degree level were slightly less likely to be working alongside full-time taught higher degree study, although again the difference was marginal (12.4%, as against 15.5% of those who had not paid their own fees). In fact those paying their own first-degree fees were more likely to progress to taught higher degree study than graduates who had not paid their own fees, but again, not by much (odds ratio = 1.31). This was true for research

⁹⁴ In 2004/05, 19.9% of full-time research students in the postgraduate student record dataset were liable for their own tuition fee, compared to 67.5% of those taking taught higher degrees.

degrees too (odds ratio = 1.07), but not PGCE (odds ratio = 0.95). A trivariate comparison which includes progression to taught higher degree study, first-degree fee liability and social class shows that social class is associated with progression to postgraduate study in both groups, but the association is stronger among those liable for their own first-degree tuition fees (see Table 6.3).

Table 6.3: Proportion of first-degree graduates progressing to taught higher-degree study by social class and whether graduate was responsible for their own first-degree tuition fees, 2001/02 – 2004/05

Social class	Not liable for own first-degree tuition fees		Liable for own first-degree tuition fees	
	Rate	<i>N</i>	Rate	<i>N</i>
1 Higher managerial and professional occupations	0.072	45,380	0.093	58,480
2 Lower managerial and professional occupations	0.065	125,415	0.083	108,715
3 Intermediate occupations	0.064	47,390	0.076	25,110
4 Small employers and own account workers	0.059	5,705	0.079	2,645
5 Lower supervisory and technical occupations	0.061	48,825	0.070	21,575
6 Semi-routine occupations	0.061	32,065	0.072	11,445
7 Routine occupations	0.061	10,045	0.059	2,495
<i>Total</i>	<i>0.065</i>	<i>314,830</i>	<i>0.083</i>	<i>230,470</i>

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

Another indicator of socio-economic position is whether or not a graduate attended an independent secondary school. As with social class, there is a known relationship between independent school attendance and progression to higher education, particularly to the more prestigious universities (Sutton Trust, 2004; see also HESA, 2008b, table 1a), although it should be noted that not all independent schools are selective (Marson, 2005), nor are all state schools comprehensives or indeed predominantly working-class (e.g. Croxford and Paterson, 2006). The results here are similar to those for tuition fee liability. There is a small inequality in rates of progression to research degrees between state and independent school former pupils (odds ratio = 1.15). This inequality is higher for progression to taught higher degrees, but not a great deal (odds ratio = 1.34). However for

progression to a PGCE there is a substantial difference (odds ratio = 0.56), perhaps indicating a general antipathy to the public sector in the familial milieu of independently-schooled students.

Combining school type and social class shows interesting patterns (Table 6.4). For progression to a research degree there is only a small difference between progression rates for the two sectors. Classes 5 and 6 are an exception, as for them attending an independent secondary school increases the likelihood of progressing to a research degree. However only about 6% of graduates from Classes 5 and 6 attended an independent school, compared to 25% of Class 1 graduates and 16% of graduates from Class 2. There could be some selection on ability, with those from the lower social classes at independent schools being academically-able scholarship pupils, but it is more likely that they are from families who are comfortably-off financially.⁹⁵

Table 6.4: Proportion of first-degree graduates progressing to postgraduate study by type of postgraduate study, type of secondary school attended (state or independent sector) and social class, 2001/02 – 2004/05

Social class	Research degree		Taught higher degree		PGCE	
	State	Ind	State	Ind	State	Ind
1 Higher managerial and professional occupations	0.032	0.030	0.080	0.096	0.031	0.017
2 Lower managerial and professional occupations	0.026	0.025	0.071	0.087	0.034	0.020
3 Intermediate occupations	0.022	0.024	0.066	0.087	0.037	0.019
4 Small employers and own account workers	0.007	0.016	0.062	0.109	0.044	0.031
5 Lower supervisory and technical occupations	0.023	0.032	0.062	0.077	0.038	0.023
6 Semi-routine occupations	0.021	0.032	0.062	0.095	0.039	0.026
7 Routine occupations	0.016	0.017	0.061	0.068	0.041	0.021
<i>Total</i>	<i>0.025</i>	<i>0.027</i>	<i>0.069</i>	<i>0.090</i>	<i>0.035</i>	<i>0.019</i>

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

⁹⁵ The average termly fee for a day pupil at independent schools which were members of the Independent Schools Council for January 2008 was £3,193 (ISC, 2008, p. 8, fig. 4). About one-third of pupils received some support towards their fees, although few of these are likely to have been full scholarships. Public funding for pupils in independent schools (the ‘Assisted Places Scheme’) was discontinued in 1997.

There is a greater difference between school types in progression to taught higher degree study. Here social class generally has an additive effect: a higher social class background increases the likelihood of progressing to taught higher degree study, as does having attended an independent school. Thus a Class 3 graduate who attended independent school is more likely to progress to taught higher degree study than a state school Class 1 graduate. As for progression to a PGCE, controlling for school type reduces the overall effect of social class a little. Graduates who were pupils at independent schools are less likely to progress to a PGCE than their former state school peers, regardless of social class background.⁹⁶

To summarise, further examination of overall trends in progression to different kinds of postgraduate study by social class has confirmed there are differences consistent across time. Those from Classes 1 and 2 are most likely to progress to higher degrees, whilst Class 6 and 7 graduates are most likely to progress to a PGCE. Entry to ‘other’ postgraduate study saw little difference by social class. However differences tended not to be large and were certainly less marked than for entry to undergraduate study. There appeared to be an interaction of social class and gender such that gender was a better predictor of whether a graduate would progress to (say) a PGCE than social class, but within gender social class differences remained. There was a suggestion that the ‘extra’ taught higher degree students from the higher social classes were studying rather than face unemployment, perhaps because they possessed the financial means to do so. Analysis of patterns of study and paid employment and of the mode of study of those graduates entering postgraduate study also hinted at a financial dimension, as did the use of undergraduate fee liability as the dependent variable in a two-way contingency table. Finally, although social class seemed better to predict progression to postgraduate study

⁹⁶ See the note about interaction effects in Chapter 7.

than the type of secondary school attended, combining the two suggested an additive effect.

How do these findings sit with previous research on the social class background of postgraduate students discussed in Chapter 3? The apparent finding that the strength of the social class effect dissipates at postgraduate level concurs with previous studies which showed a declining influence of background on later educational transitions. However, the fact that there remains *some* continuation of social class effect on the transition to postgraduate study for *both* taught and research higher degrees differs somewhat from previous research, as does the finding of an association between social class, financial factors and progression.

Whilst it should be noted that my analysis is based on a larger and more complete dataset than most previous studies, it is also the case that many of the studies found no social class effect only once a range of independent variables had been controlled for (as indeed is the case for access to first degrees). Chief among these confounders were subject of study, type of institution attended and academic attainment. Chapter 3 also set out the empirical and theoretical justifications for incorporating institutional and subject-related variation in postgraduate progression into the analysis. These organisational factors have been shown to exert an influence both on progression *per se* and on higher education's internal social stratification. In the Bourdieusian tradition in particular both subjects and institutions of study are linked to strategies of class reproduction, carrying differing amounts of symbolic capital. Neo-Weberian approaches too emphasise increasing institutional stratification as a means of social closure.

The next stage of the analysis therefore turns to consideration of possible intervening variables, aiming to establish whether apparent differences in social class progression rates remain when other candidate factors are held constant. The approach taken is deliberately to use simple bi- and trivariate associations in order to examine and

understand the association between individual factors, social class and progression to postgraduate study. This will prepare the ground for more complex statistical modelling, which will be the focus of the next chapter. The key issue in this chapter is whether the relatively weak relationship between social class background and progression to postgraduate study disappears entirely when other factors are taken into account, or whether instead considering these other factors reveals new classed patterns of inequality.

Social class or degree class? Possible intervening factors

This section comprises an examination of plausible intervening factors which could account for the apparent relationship between social class and postgraduate study as a first destination.⁹⁷ These are principally ‘academic’ factors in that they are not directly related to a graduate’s socio-demographic characteristics. Arguably such factors as the subject discipline of one’s first degree, the institution attended for the first degree and the degree classification attained are *legitimate* discriminators governing access to postgraduate study since they could be taken as proxies for intellectual aptitude for and interest in postgraduate study. On the other hand, these three academic factors might themselves be *socially* structured, such that they are not simply benign indicators of fitness and aspiration for postgraduate study but rather signifiers of social distinction which are unequally accessible on, *inter alia*, grounds of social class (Bourdieu and Passeron, 1979; Bourdieu, 1996).

Academic attainment is a more likely candidate for ‘explaining away’ the apparent social class differences in progression to postgraduate study. As described in Chapter 3, there is a well established and strong relationship between prior academic attainment and

⁹⁷ Age was considered as a potential intervening variable. There is wide age variation age at postgraduate level: the mean age of home postgraduates in the postgraduate student record dataset for 2004/05 was 34 (inter-quartile range 25 – 41; mode 23). However, a comparison of the mean age and age profiles of first-degree graduates progressing and not progressing to postgraduate study shows very little difference, including when social class is added as a third variable.

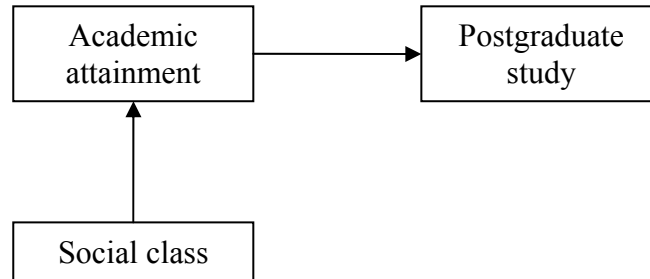
both entry to undergraduate study and social class background. Qualifications and grades obtained clearly account for a substantial amount of the social class differences observed in initial access, although there is some disagreement about the extent to which this applies. Some argue that differential achievement by social class in school-leaving qualifications explains differential rates of participation almost entirely, whereas others point to class-based inequalities *within* higher education in terms of the prestige of the institution attended, the experience of study (debt, term-time working etc) and graduate outcomes which cannot be reduced to prior attainment.

However it remains to be seen whether this argument can be extended to the postgraduate level. Given the cross-national evidence that (at least prior to postgraduate study) the effect of socio-economic background declines the higher one moves through the education system, one might reasonably expect that upon graduation, the effect of home background has minimised such that ability is the main criterion for progression to higher studies. There is plenty of ‘common-sense’ justification for this supposition: graduates are considered to be middle-class *qua* graduates; graduates are increasingly homogenous in terms of their unobserved characteristics by virtue of their educational survival; and meritocratic recruitment to postgraduate study is in universities’ self-interest.⁹⁸ I have shown that there is a difference in progression to postgraduate study by social class, but if it disappears once attainment is controlled for, it can be concluded there is nothing unjust about the relationship, at least as far as the undergraduate to postgraduate transition is concerned. In this case, the higher education system itself could not be considered culpable for class inequalities in postgraduate access and these could be expected to disappear if class inequalities at earlier points in the system were removed. Figure 6.6 illustrates possible relationships between social class, academic attainment and postgraduate study in

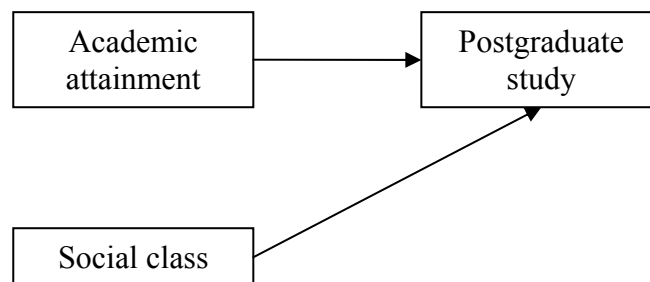
⁹⁸ This could still leave access to financial resources – as distinct from social class – as a potential source of inequality in access to postgraduate study, since in the absence of sufficient studentships or other financial support, ability to pay becomes an important factor alongside ability.

Figure 6.6: Models of the relationship between social class, academic attainment and progression to postgraduate study⁹⁹

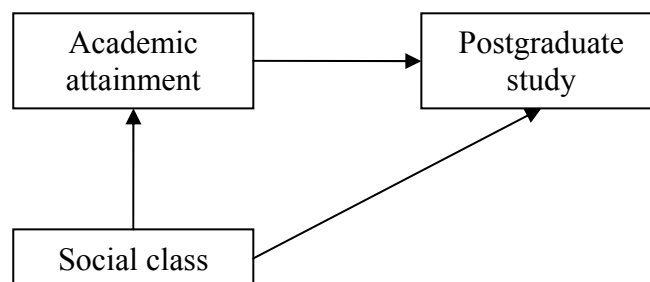
(a) social class influences progression to postgraduate study indirectly through attainment



(b) both social class and academic attainment independently influence access to postgraduate study

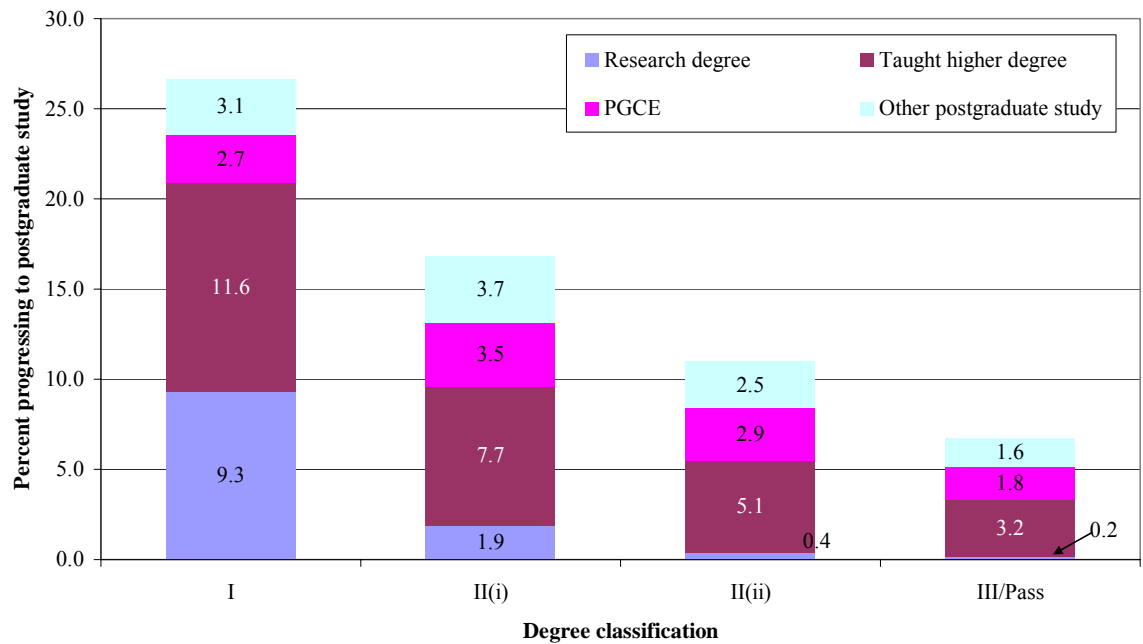


(c) social class influences access to postgraduate study both directly and indirectly through academic attainment



⁹⁹ Goldthorpe and Jackson (2008) have suggested an alternative to the standard interpretation of Hout (1988) that the strength of the origin-destination link varies with education. Instead they suggest that the strength of the *education-destination* link should be taken to vary with *origin*. Adapting this idea to viewing postgraduate study as the 'destination' this would mean that attainment is more important in accessing postgraduate study for those from the lower social classes.

Figure 6.7: Progression to postgraduate study by type of postgraduate study and classification of first-degree, 2001/02 – 2004/05



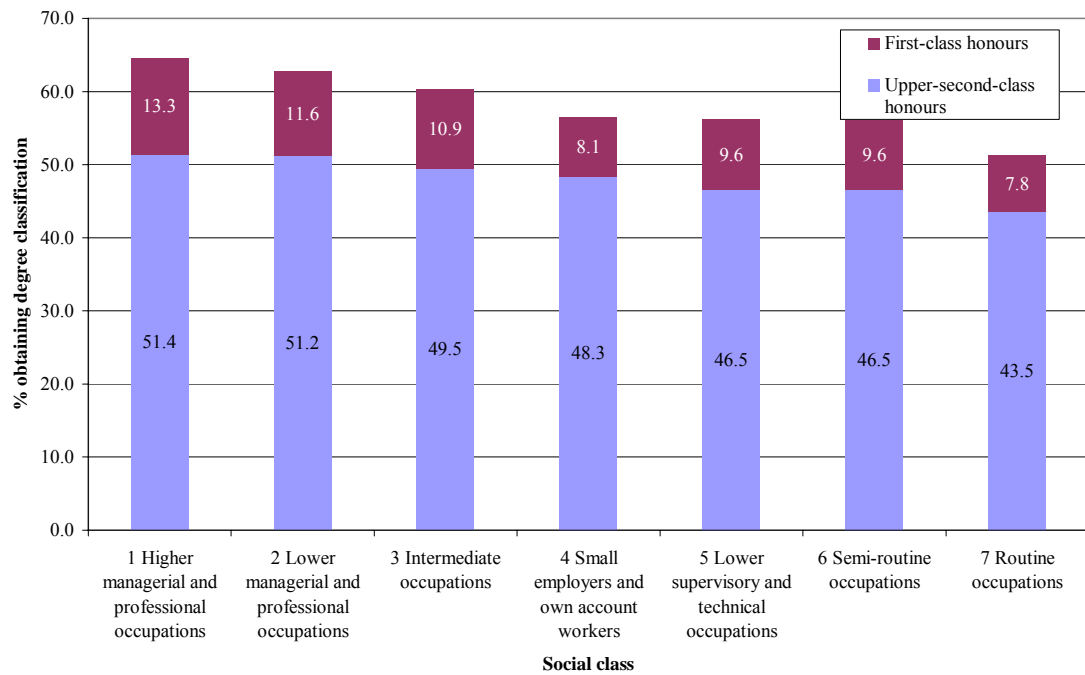
Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

diagrammatic form, using the standard ‘O-E-D’ (origins-education-destinations) format (see Erikson and Jonsson, 1996). Here, of course, the diagram is properly conceived of as ‘O-E₁-E₂’.

Figure 6.7 shows, as one would anticipate, a clear and monotonic relationship between academic attainment (as represented by degree classification obtained)¹⁰⁰ and progression to postgraduate study. Between 2001/02 and 2004/05, about one in four graduates with a first-class honours degree proceeded to postgraduate study. Around one in six graduates with upper-second-class honours did the same. However the effect of attainment was much more pronounced for progression to a research degree. Typically

¹⁰⁰ Controversy surrounds the comparability of degree classifications across institutions. Whereas A-levels and similar qualifications have a small number of awarding bodies with systems in place to ensure consistency across examination boards and subjects, this is not the case in HE. Each university is its own awarding body and academic standards are set locally. Although there is a system of external examiners, critics have argued that there is wide variability in degree classifications across institutions and indeed subjects within the same institution (see The Burgess Group, 2007; Yorke, 2007). Nonetheless, the degree classification remains, despite its flaws, the only available signal of a graduate’s attainment.

Figure 6.8: 'Good' degrees obtained by social class, 2001/02 – 2004/05



Source: HESA Student Record 2001/02 – 2004/05

Table 6.5: Odds ratios for progression to postgraduate study by social class and degree classification, first degree graduates 2001/02 – 2004/05

Social class	Degree classification			
	I	IIi	IIii	III/Pass
<i>(a) Research degree</i>				
1 Higher managerial and professional occupations	(reference category)			
2 Lower managerial and professional occupations	0.87	0.82	0.83	0.75
3 Intermediate occupations	0.78	0.73	0.71	0.76
4 Small employers and own account workers	0.29	0.34	0.37	-
5 Lower supervisory and technical occupations	0.94	0.86	0.72	1.03
6 Semi-routine occupations	0.78	0.80	0.68	0.85
7 Routine occupations	0.61	0.69	0.83	-
<i>(b) Taught higher degree</i>				
1 Higher managerial and professional occupations	(reference category)			
2 Lower managerial and professional occupations	0.93	0.88	0.81	0.65
3 Intermediate occupations	0.95	0.81	0.74	0.53
4 Small employers and own account workers	1.09	0.83	0.67	0.49
5 Lower supervisory and technical occupations	0.75	0.78	0.77	0.60
6 Semi-routine occupations	0.78	0.80	0.75	0.56
7 Routine occupations	0.98	0.72	0.77	0.47

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

entry to a PhD requires at least upper-second-class honours, so it is not surprising that very few graduates without that level of attainment found their way onto a research degree.

However those with a first-class degree were almost five times more likely than upper-second-class graduates to make the transition. For taught higher degrees the effect of degree classification remains, but the contrast between classifications is much less marked. For PGCE, the monotonic pattern disappears. Here the contrast is between those with third class honours or lower and the rest. As noted in Chapter 5, previous research has shown a relationship between social class and degree classification obtained (Smith and Naylor, 2001, 2005).¹⁰¹ This is confirmed in Figure 6.8 which shows a clear link between social class and obtaining a 'good' degree (that is a first or upper-second). If access to postgraduate study is affected by degree classification and degree classification is linked to social class, then it follows, as in Figure 6.6a, that social class will influence progression to postgraduate study.

The question is now whether any relationship between social class and access to postgraduate study remains once degree classification has been accounted for. Table 6.5 gives odds ratios for progression to research and taught higher degrees by social class broken down by degree classification. Basically the table is reporting the ratio of the odds that a graduate with a particular degree classification proceeds to postgraduate study, with Class 1 as the reference category. Comparing these odds ratios to the overall odds ratios reported in Table 6.2 it appears that controlling for degree classification reduces, but does not completely remove, the association between social class and progression to postgraduate study. The slightly weaker tendency for graduates of Class 1 to progress to taught higher degrees at a greater rate remains, controlling for degree classification. There appears to be some interaction too: the relative advantage for Class 1 graduates increases in inverse proportion to attainment.¹⁰² In other words, being from a Class 1 background

¹⁰¹ Hansen and Mastekaasa (2006) report a similar trend in Norway.

¹⁰² Although see the note in Chapter 7 about interaction effects.

appears to be of greater assistance in progressing to a taught higher degree among those without a 'good' degree. For research degree progression, the relationship between social class and progression to postgraduate study is stronger, but degree classification clearly accounts for some of the association. In other words, the model outlined in Figure 6.6c is the most accurate representation: the influence of social class on progression is partly, but not wholly through its influence on degree classification. A speculative explanation of these findings is that there is a residual social class effect, one which is weaker than some sociological theory might predict, but which nevertheless is inequitable. There is a suggestion that, as previous research has described, class advantages are most effectively mobilised in mitigating weaker academic performance (e.g. Devine, 2004; Goldthorpe and Jackson, 2008; Marsh and Blackburn, 1992). For the academically able, class background is of less importance in the transition to postgraduate study.

Subject of study

The nature of the student experience in higher education and the characteristics of the students themselves vary across subject disciplines. As detailed in earlier chapters, male:female ratio, social class background, entry qualifications, institutional location and common graduate destinations differ by subject. Consequently it is a distinct possibility that the apparent social class differential in access to postgraduate study is simply an artefact of the differential distribution of the social classes across subjects. This section addresses that possibility by exploring the interplay of social class, progression to postgraduate study and subject of first degree.

Figure 6.9 shows that the social classes are differentially distributed across subjects. If we take the representation of graduates from Classes 1 and 2 as a measure of exclusivity, Medicine & Dentistry is the most exclusive subject grouping and Education

the least. The proportion of graduates from Class 1 is particularly high in Medicine & Dentistry, being more than twice that of first-degree study as a whole (39.9% against 19.0%).¹⁰³ The social class composition of Education as an undergraduate subject recalls the progression rates by social class seen for PGCE. Humanities subjects appear to be more exclusive on the whole than the ‘STEM’ subjects (science, technology, engineering and mathematics). Vocationally-oriented subjects tend to be less exclusive, except for the ‘higher’ professions (medicine, veterinary science, law – see Chapter 2). This pattern of subject distribution by social class lends some support to Bourdieu’s (1996) theory regarding the relationship between social exclusivity, cultural capital and the nature of higher education disciplines, with those subjects involving a mastery of ‘high’ culture and/or being academically ‘pure’ generally being more exclusive than those which are ‘applied’ and/or which do not require ‘appreciation’ (see also Wakeling, 2005a). However in every subject at least half of the graduates are from Classes 1 and 2.

There is greater variation in the proportion of graduates progressing to postgraduate study by subject than there is in the proportions from Classes 1 and 2 by subject (Figures 6.9 and 6.10).¹⁰⁴ Almost half of Law graduates progressed to postgraduate study in the period 2001/02, but in Medicine & Dentistry the progression rate was less than one in twenty.¹⁰⁵ Whilst progression rates by subject could in principle be influenced in some way by the subject’s social class composition, this seems unlikely to be the main determinant. An explanation based on the options open to graduates in particular subjects and their motivation for choosing that subject in the first place seems more plausible. It is reasonable to assume that a student choosing to take a Law degree has some interest in practising law as a profession. Since qualification as a lawyer requires a postgraduate qualification (the

¹⁰³ Medicine is known to have a high level of direct occupational inheritance (Chevalier, 2002; Devine, 2004; Jonsson *et al.*, 2009).

¹⁰⁴ The standard deviation for social class is 6.1% and for progression to postgraduate study, 11.2%.

¹⁰⁵ Note that substantial subject-based variations in *progression* to postgraduate study are different to equally large variation in postgraduate *registrations* by subject (see Figure 5.1). The implication of these differences will be discussed in Chapter 8.

Figure 6.9: Percentage of graduates from Classes 1 and 2 by JACS subject grouping, 2001/02 – 2004/05

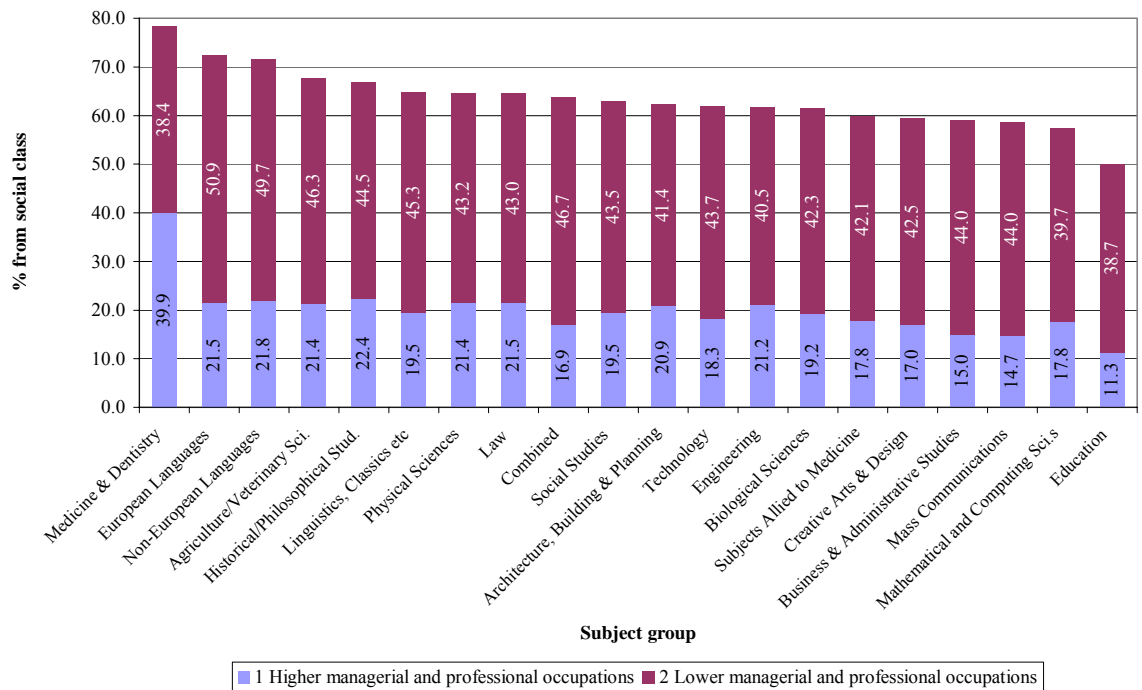
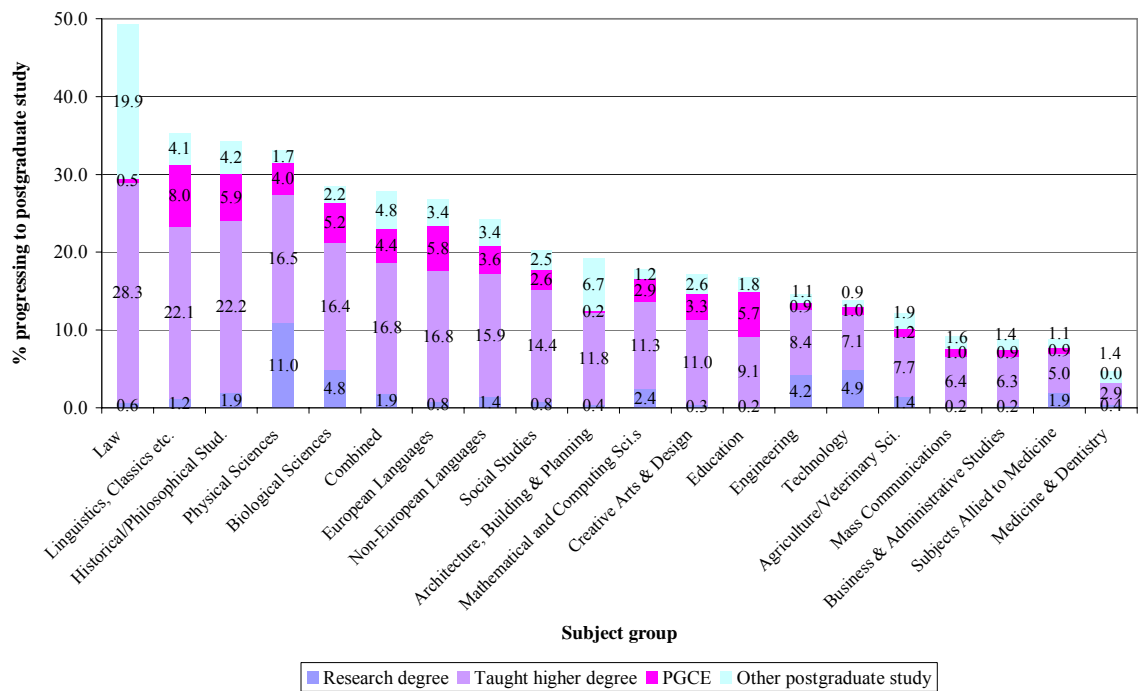


Figure 6.10: Percentage of graduates progressing to postgraduate study by JACS subject grouping and type of postgraduate study, 2001/02 – 2004/05



Source (both figures): FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05.

Legal Practice Course), it is hardly surprising that so many Law graduates proceed to postgraduate study. Such courses can either be taken as a professional certificate or incorporated in a masters degree. Given the applied nature of the subject, the vocational focus of its students and the relatively weak tradition of academic research in the subject it is not surprising that few Law graduates proceed to a research degree. Furthermore, one would not expect many Law graduates to switch to teaching following their first degree – and indeed they would find it difficult to do so since acceptance onto a PGCE course typically requires a first degree comprising a substantial component of a National Curriculum subject (which Law is not). Only about one in 200 Law graduates progressed to a PGCE in the period 2001/02 – 2004/05.

Similarly, students taking a medical degree are almost certain to be highly motivated to practise medicine; in fact a demonstrated commitment to do so is usually a prerequisite for admission to a medical school (BMA, 2007). Although medical graduates entering the profession need to undertake postgraduate training in order to become fully qualified, this training is (at present) offered by the postgraduate deaneries of NHS trusts and thus fully integrated into professional practice (rather than being an external postgraduate course offered by a higher education institution). This, coupled with the availability of sufficient posts for newly qualified physicians and dentists, would explain the very low take up of postgraduate courses by Medicine & Dentistry graduates.^{106, 107}

As noted above, Medicine & Dentistry is the most exclusive subject area in terms of social class. Since so few of its graduates proceed to postgraduate study, this will tend to depress the overall rate of progression for the higher social classes, particularly Class 1 graduates. However another relatively exclusive subject, Historical and Philosophical

¹⁰⁶ Veterinary Science (which is aggregated with Agriculture, Forestry and Food subjects in the JACS subject groupings) shows very similar patterns of (non) progression.

¹⁰⁷ A career as a hospital consultant offers an alternative ‘academic’ route, conferring high status, and often association with a medical school. It is likely that postgraduate students in Medicine & Dentistry either qualified in other disciplines and are carrying out medical research or have *returned* to study after a period in medical practice.

Studies (broadly comprising the disciplines of history, archaeology, philosophy and theology) has one of the highest rates of progression to postgraduate study. Here a first degree is not designed as preparation for any particular career but rather provides a general academic education in the subject in question which can lead to a variety of careers.¹⁰⁸ Consequently for entry to a particular career graduates in history and similar academically-focussed subjects are more likely to enrol on a taught postgraduate programme to improve their chances in the labour market (Stuart *et al*, 2008). Many history graduates go on to become history teachers, giving Historical & Philosophical Studies one of the highest rates of progression to PGCE. The subject also has a relatively high rate of entry to research degrees, presumably those intending to become professional historians and/or to teach history at tertiary level.¹⁰⁹

Just as Law dominates progression to other postgraduate courses (comprising 29.4% of all first degree graduates with this destination between 2001/02 – 2004/05), so Physical Sciences exerts a similar influence on progression to a research degree, with 27.3% of the total. This subject grouping covers chemistry, physics, materials science and earth sciences. Looking at some of the individual subjects it seems that in Chemistry, Physics and Astronomy fully one-fifth of graduates proceed immediately to a research degree, but in earth sciences the rate is much lower. Again, this is partly due to the structure of opportunities available to graduates in these subjects, where there are a range of postdoctoral research jobs available and many new entrants to the relevant industries have a doctorate. In any case, the social class composition of Physical Sciences will strongly influence the overall pattern of progression to a research degree simply because of the size of its share of those destined for research degrees.

¹⁰⁸ Graduate Prospects' publication *What Do Graduates Do? 2008* (Ball *et al*, 2007, p. 59) gives a breakdown of the types of work undertaken by history graduates in 2006. About 21% of those in employment were in clerical/secretarial work, 15% undertaking catering or bar work, 11% were managers and 10% business and financial professionals. In contrast, 99.4% of medical graduates were health professionals (Prospects, Medicine – 2006 graduates, n.d.).

¹⁰⁹ PhD graduates in the arts and humanities in 2004 mainly entered careers in higher and further education, but almost one-third entered other sectors (Prospects, What do doctoral graduates in arts and humanities do 2006? n.d.).

Table 6.6: Proportion of graduates in selected subjects progressing to postgraduate study by social class and type of postgraduate study, 2001/02 – 2004/05

Social class/ type of postgraduate study	Research degree	Taught higher degree	PGCE	Other postgrad. study	Total (all destinations)
<i>(a) Medicine & Dentistry</i>					
1 Higher managerial/professional	0.006	0.024	0.000	0.025	5,240
2 Lower managerial/professional	0.005	0.019	0.000	0.018	5,045
3 Intermediate occupations	0.002	0.022	0.002	0.019	1,155
4 Small employers/self-employed	0.099	0.198	0.000	0.000	10
5 Lower supervisory and technical	0.005	0.012	0.000	0.011	1,035
6 Semi-routine occupations	0.004	0.017	0.002	0.018	555
7 Routine occupations	0.014	0.042	0.000	0.000	80
<i>(b) Physical Sciences</i>					
1 Higher managerial/professional	0.126	0.124	0.036	0.017	6,820
2 Lower managerial/professional	0.117	0.105	0.037	0.017	13,775
3 Intermediate occupations	0.117	0.106	0.046	0.012	3,935
4 Small employers/self-employed	0.025	0.121	0.059	0.014	310
5 Lower supervisory and technical	0.130	0.100	0.044	0.016	4,225
6 Semi-routine occupations	0.113	0.111	0.048	0.020	2,240
7 Routine occupations	0.109	0.086	0.061	0.007	610
<i>(c) Social Studies</i>					
1 Higher managerial/professional	0.010	0.114	0.022	0.030	10,220
2 Lower managerial/professional	0.008	0.103	0.028	0.025	22,845
3 Intermediate occupations	0.007	0.093	0.028	0.024	7,245
4 Small employers/self-employed	0.005	0.102	0.026	0.020	915
5 Lower supervisory and technical	0.006	0.084	0.032	0.020	5,930
6 Semi-routine occupations	0.007	0.083	0.027	0.020	4,155
7 Routine occupations	0.004	0.093	0.034	0.030	1,215
<i>(d) Law</i>					
1 Higher managerial/professional	0.006	0.079	0.004	0.206	5,890
2 Lower managerial/professional	0.006	0.082	0.006	0.204	11,805
3 Intermediate occupations	0.006	0.083	0.005	0.186	3,540
4 Small employers/self-employed	0.004	0.054	0.000	0.157	455
5 Lower supervisory and technical	0.007	0.082	0.008	0.202	3,185
6 Semi-routine occupations	0.005	0.075	0.008	0.174	1,905
7 Routine occupations	0.002	0.063	0.003	0.160	665
<i>(e) Historical/Philosophical Stud.s</i>					
1 Higher managerial/professional	0.025	0.130	0.040	0.054	7,680
2 Lower managerial/professional	0.021	0.125	0.052	0.039	15,270
3 Intermediate occupations	0.019	0.124	0.067	0.040	4,500
4 Small employers/self-employed	0.008	0.133	0.086	0.025	510
5 Lower supervisory and technical	0.013	0.107	0.083	0.043	3,455
6 Semi-routine occupations	0.017	0.105	0.076	0.029	2,220
7 Routine occupations	0.010	0.115	0.072	0.041	660

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

In order to unpick this in a little more detail, Table 6.6 presents progression rates by social class separately for selected subjects. In Medicine & Dentistry there is little noteworthy class difference in progression to postgraduate study, presumably because the overall rate of progression is so small. Class 1 graduates are more likely to take other postgraduate study, but the absolute numbers of graduates progressing is substantively insignificant. In Physical Sciences, where a much larger proportion of graduates follow their first degree with a postgraduate course, the general pattern observed for research degrees and PGCEs is repeated. Research degrees are generally more exclusive and PGCEs the opposite. However controlling for attainment for research degree progression removes the class inequality for first-class honours degrees and actually reverses it for upper-seconds. Social studies exhibits little class inequality in progression to postgraduate study, except for research degrees. This finding needs to be treated with caution however as increasingly entry to research degree study in the social sciences is via a research training masters degree (as encapsulated in the ESRC's '1+3' model). Since it is not possible separately to identify students following such a route (either funded or unfunded) the meaning of the pattern identified must remain ambiguous. Research degree and PGCE numbers are small for Law, but for taught postgraduate courses (both higher degrees and others) there is a clear difference between progression rates for Classes 6 and 7 and others. This might indicate differences in access to financial resources, since postgraduate legal practice courses can be expensive and studentships are very scarce.¹¹⁰ Finally, in Historical & Philosophical Studies, social class inequalities are evident in progression to three of the four possible postgraduate destinations. Class 1 and 2 graduates are somewhat more likely to progress to a research degree than their Class 5, 6 and 7 peers, whereas Class 1 graduates are more likely to progress to 'other' postgraduate courses. Class 5, 6 and 7 graduates are more likely to progress to a PGCE than those from Classes 1, 2 and 3 but

¹¹⁰ In 2004/05, 76% of postgraduate diploma and 61% of professional qualification students in Law had no financial award (source: postgraduate student record dataset).

there is no apparent pattern of progression to a taught higher degree by social class (this being the most popular postgraduate destination for graduates in Historical & Philosophical Studies).

It is clear that subject of study confounds the relationship between social class and progression to postgraduate study. Within some subjects progression to postgraduate study appears to vary very little across the social classes, yet in others there are variations only for certain postgraduate destinations. As predicted, subject of study structures progression to postgraduate study, but this variation is perhaps more complex than anticipated, pointing to path-dependent transitions.

Some aspects of subject choice can be understood as affected by social class. From a Bourdieusian perspective this might mean students from particular backgrounds feel at ease in some subjects but not others due to the nature of the subject and its assonance or dissonance with their familial habitus. Alternatively, under RRA subjects can be considered more or less risky for the mobility strategies of students from different backgrounds. For instance a working-class history graduate would, according to RRA, tend to opt for a PGCE over an MA in (say) Renaissance and Early Modern Studies because the former is strongly associated with secure professional employment whereas the latter is not – and that is before considering the direct financial costs of both options.

Other aspects of subject choice are perhaps more banal, at least seen in the context of class inequalities. So the differences between progression to research degree study in Physical Sciences and Medicine and Dentistry are related to the nature of the two intellectual areas, the structure of the graduate labour market for their graduates and the unobserved motivations of students in the respective subjects. Put crudely, Dentistry students presumably want to be dentists, for which postgraduate study is not required; Physical Science students may want to work in areas closely related to their degree, although some will not. Those who do will most likely need to take a PhD.

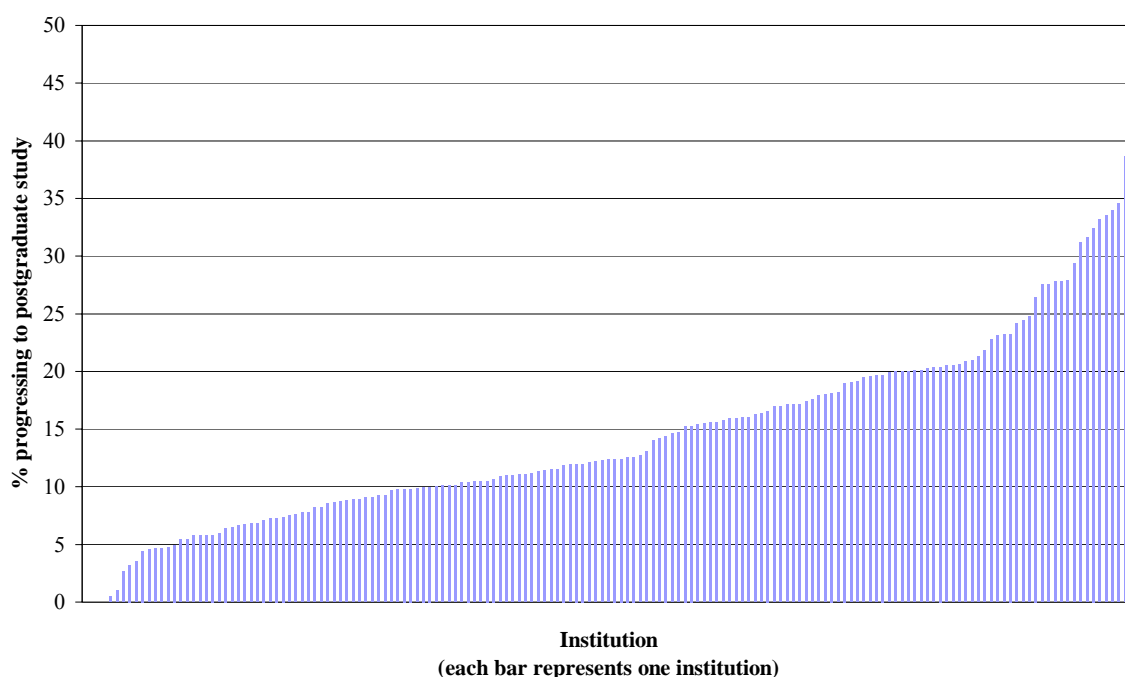
Thus the trivariate relationship between social class, subject of study and progression to postgraduate education is a complex one. Principally, subject of study serves to confound the relationship between social class and progression to postgraduate education. Differences in the proportion of first-degree graduates from particular social class backgrounds and in rates of progression by postgraduate study by subject undoubtedly contribute to the overall difference in progression by social class. In this sense, subject of study is a benign (partial) explanation for overall social class differences. However it remains possible that a secondary effect of subject of study differences is directly related to social class, because of classed differences in the process of choosing a subject, either at undergraduate or at postgraduate level.

First-degree institution

Subject of study, however, is not likely to be the sole factor exerting such a strong influence on progression. Students are taught in subjects, but they are also taught in specific institutions. As noted in Chapters 2 and 5, there are wide variations in the distribution of postgraduate students by institution. Some institutions have a very high proportion of postgraduates whereas others have little postgraduate provision. Research student numbers are concentrated in a small number of universities. We should expect to see differences in the rate of progression to postgraduate study by institution (and by type of institution). To some extent this will be conditioned by the subject mix of different institutions and by the attainment of their undergraduates. As noted in Chapter 3, there is a wide variation in the social class composition of the student body across institution (and institution type). Apparent social class differences might therefore simply represent institutional differences in progression.

Figure 6.11 makes plain the variation in progression to postgraduate study by institution (mean = 14.7%; standard deviation = 8.8%). Three institutions sent no graduates to postgraduate study; all were monotechs, two of which had a small number of graduates only. Generally speaking those sending only a small proportion of graduates to further study tended to be medical schools, agricultural colleges, art and design institutes and similar establishments. At the other end of the scale, those institutions with a large proportion of graduates entering postgraduate study as a first destination were mainly colleges of music and (some of) the major research universities.

Figure 6.11: Rate of progression to postgraduate study (all types) by first-degree institution, 2001/02 – 2004/05 (sorted in ascending order by overall rate of progression)

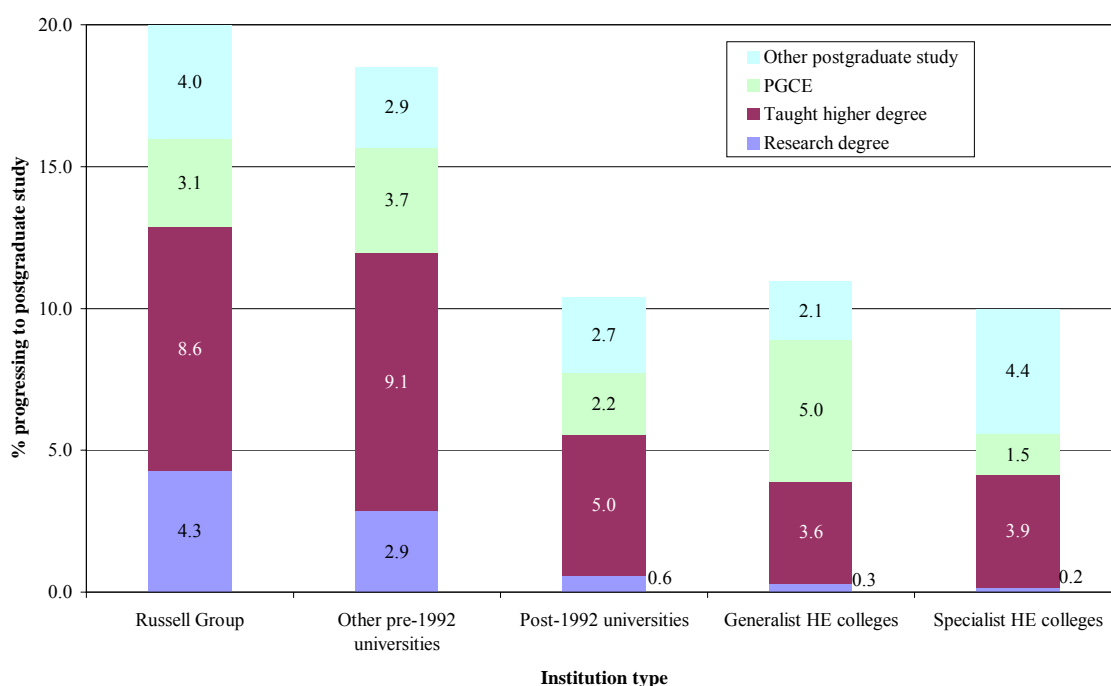


Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

Disparity in progression to different types of postgraduate study by institution was mentioned in Chapter 5, where it was shown that a few institutions had a very high progression rate to research degrees. Figure 6.12 makes this plain, using broad institutional

type instead of individual institutions.¹¹¹ Graduates of ‘old’ universities are much more likely to progress to higher degrees than graduates of other institutions, with Russell Group graduates being even more likely than graduates from other old universities to progress to a research degree. Some of the inter-institutional differences here are likely to reflect different subject balances: for instance almost three-quarters of Physical Sciences graduates attended an old university.

Figure 6.12: Rate of progression to postgraduate study by first-degree institution type and type of postgraduate study, 2001/02 – 2004/05



Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

The key question however is whether differential progression by social class holds true across institution type. Table 6.7, which presents odds ratios for progression to postgraduate study by social class and institution type, suggests not. Progression to a

¹¹¹ Institutions were allocated to groups based on their status in 2002. Since that year around twenty more institutions have achieved university status, all of which are categorised as ‘Generalist HE colleges’ here. Institutions are divided between pre- and post-1992 universities because 1992 was the year when the ‘binary divide’ between universities and polytechnics was dissolved, with almost 40 new universities created (Tight, 2007).

Table 6.7: Proportion of graduates progressing to postgraduate study by social class, type of first degree institution and type of postgraduate study, 2001/02 – 2004/05

Social class/ type of postgraduate study	Research degree	Taught higher degree	PGCE	Other postgrad. study	Total (all destinations)
<i>(a) Russell Group</i>					
1 Higher managerial/professional	0.047	0.093	0.024	0.048	46,455
2 Lower managerial/professional	0.043	0.088	0.032	0.042	80,680
3 Intermediate occupations	0.044	0.089	0.038	0.038	20,465
4 Small employers/self-employed	0.019	0.105	0.049	0.034	1,785
5 Lower supervisory and technical	0.049	0.078	0.042	0.039	17,200
6 Semi-routine occupations	0.047	0.087	0.043	0.034	9,565
7 Routine occupations	0.037	0.076	0.049	0.036	2,475
<i>(b) Other pre-1992 universities</i>					
1 Higher managerial/professional	0.032	0.104	0.033	0.032	28,385
2 Lower managerial/professional	0.029	0.094	0.039	0.035	63,810
3 Intermediate occupations	0.027	0.091	0.043	0.032	18,285
4 Small employers/self-employed	0.012	0.100	0.045	0.013	1,730
5 Lower supervisory and technical	0.034	0.090	0.045	0.020	17,560
6 Semi-routine occupations	0.031	0.083	0.044	0.038	10,290
7 Routine occupations	0.025	0.075	0.043	0.014	2,670
<i>(c) Post-1992 universities</i>					
1 Higher managerial/professional	0.005	0.051	0.020	0.026	21,715
2 Lower managerial/professional	0.005	0.049	0.021	0.026	66,410
3 Intermediate occupations	0.005	0.048	0.025	0.025	25,100
4 Small employers/self-employed	0.003	0.041	0.030	0.029	3,275
5 Lower supervisory and technical	0.006	0.048	0.024	0.024	26,650
6 Semi-routine occupations	0.006	0.049	0.025	0.025	18,120
7 Routine occupations	0.006	0.055	0.032	0.028	5,680
<i>(d) Generalist HE colleges</i>					
1 Higher managerial/professional	0.002	0.036	0.051	0.026	5,515
2 Lower managerial/professional	0.003	0.036	0.048	0.026	19,140
3 Intermediate occupations	0.003	0.034	0.055	0.025	7,240
4 Small employers/self-employed	0.002	0.037	0.072	0.029	1,250
5 Lower supervisory and technical	0.002	0.033	0.059	0.024	7,790
6 Semi-routine occupations	0.002	0.034	0.061	0.025	4,690
7 Routine occupations	0.003	0.028	0.069	0.028	1,250
<i>(e) Specialist HE colleges</i>					
1 Higher managerial/professional	0.000	0.041	0.009	0.017	1,795
2 Lower managerial/professional	0.001	0.042	0.011	0.019	4,090
3 Intermediate occupations	0.002	0.022	0.011	0.020	1,415
4 Small employers/self-employed	0.000	0.021	0.004	0.022	315
5 Lower supervisory and technical	0.003	0.034	0.018	0.019	1,200
6 Semi-routine occupations	0.000	0.051	0.017	0.018	850
7 Routine occupations	0.000	0.038	0.015	0.018	465

Sources: FDS 2001/02; DLHE 2002/03 – 2004/05; HESA Student Record 2001/02 – 2004/05

PGCE is consistently higher for the lower social classes across institution type. However progression to research degrees differs little by social class within each institution type. There is very little social class variation at all in progression to postgraduate study for graduates from generalist HE colleges. Only progression to taught higher degrees for Russell Group and other pre-1992 university graduates and to other postgraduate study for Russell Group graduates show those from Classes 1 and 2 entering postgraduate study at a higher rate than those from other social classes. In essence then, there is little variation in rates of progression to postgraduate study by social class within institution type.

So, just as with subject of study, controlling for institution type shows some of the relationship between social class and progression to postgraduate study to be spurious. The classes are differentially distributed across institution and institutions have different rates of progression to postgraduate study. Institutions which are vocationally oriented, such as the post-1992 universities and many specialist colleges perhaps have low rates of progression to postgraduate study because their students are, by nature of their being at such an institution, focussed on swift entry to the labour market. Likewise students at pre-1992 universities often study 'academic' subjects and so are more likely to be disposed to further academic study (e.g. a research degree) or in need of a further vocational qualification (e.g. a law conversion course). Furthermore, the average academic ability of students at post-1992 universities tends to be lower, when measured by attainment in public examinations (such as A-levels). If progression to postgraduate study is partly conditional on ability, then we should expect some differences between types of institution in progression rates.

Again however there is an extent to which the structuring of social class differences through an intervening variable is not simply spurious. That is to say, selection into institutions is a *classed process* and not only a matter of attainment.¹¹² Resulting social

¹¹² We might say that it is a kind of secondary effect, as discussed in Chapter 3.

class inequalities in progression to postgraduate study might then generate both unintended and more deliberate social reproduction. As an example of unintended social reproduction, we can note that pre-1992 universities, on the whole, have a stronger research culture than post-1992 universities, as demonstrated by higher grades in official assessments of research and larger incomes from competitively-won research grants. If being exposed to this culture increases a student's inclination to undertake postgraduate study then inequality of outcome could result. The process is not especially objectionable, even if the result might be.¹¹³ If, on the other hand, a first-degree from particular institutions or types of institution acts as symbolic capital and gives an entrée to social networks which support progression to postgraduate study then there is more cause for concern about social class inequalities in initial access to higher education and its subsequent effects.¹¹⁴ It was shown in Chapter 3 that there is empirical support for such a phenomenon and a theoretical apparatus with which to conceptualise it too: institutional habitus and contest/sponsored mobility. The evidence presented in this chapter could be interpreted as partially supporting these theories, although it must be borne in mind that the overall social class effect on progression to postgraduate study is relatively small.

The discussion in this and the two previous sections has covered analysis of possible intervening variables which could help to explain the apparent relationship between social class and progression from a first degree to postgraduate study. The general theme emerging is that including academic factors (attainment, subject and institution of study) reduces or even removes entirely the social class/progression to postgraduate study association, with the possible exception of progression to a PGCE. So whilst it is accurate to state that there is an association between social class and the likelihood of progressing to

¹¹³ Indeed suppressing a research culture in the name of equality would seem somewhat perverse. The situation is perhaps analogous to that discussed by Swift, where he notes that some of the familial circumstances which support the transmission of educational advantage are, in and of themselves, desirable: ("it would be wrong to prevent parents from reading bedtime stories to their children, or engaging them in intellectually stimulating conversations at meal times" (Swift, 2004, p. 7)).

¹¹⁴ Anyone who has applied for an academic job will understand the importance of symbolic and social capital in higher education!

postgraduate study, it is not necessarily a wholly *inequitable* association. This result is certainly consistent with an argument that graduates from Classes 3, 4, 5, 6 and 7 are not disadvantaged in progressing to postgraduate study when compared to graduates from Classes 1 and 2 who have attended the same type of higher education institution or who achieved the same degree result in the same subject. *Prima facie*, it suggests that universities themselves are not favouring graduates of certain socio-economic backgrounds over others in admitting new postgraduate students. However there remains an absolute disadvantage in access to postgraduate study for those from the intermediate and working classes which might be understood as resulting from the playing out of indirect social class effects (such as through subject of study, degree classification and institution attended for the first degree).

Discussion

As presented in Figure 6.6, three potential models for describing the relationship between social class, academic factors and progression to postgraduate study were proposed. Which of these is the best match? Figure 6.6b, where social class has a direct effect on progression to postgraduate study separate from academic factors, seems to represent a poor fit. The results indicate that controlling for academic factors substantially reduces, if not completely removes, the association between social class and progression to postgraduate study. The exception to this is progression to a PGCE, where social class retains an apparent influence, albeit in the opposite direction to that usually seen in educational progressions. However this finding is not sufficient to provide certainty that access to postgraduate study by social class is equitable. There are three basic reasons why it is not sufficient.

Firstly, social class could be a prior influence on academic factors themselves (as in Figures 6.6a and 6.6c). If access to certain institutions (or subjects) at undergraduate level is to some extent structured by social class rather than being purely meritocratic, then there remains inequitable access to postgraduate study, albeit determined at the point of *initial* entry to higher education rather than at graduation. There is evidence at undergraduate level that socio-economic factors do play a role in governing who enters which institution, over and above academic ability (Power *et al*, 2003; Reay *et al*, 2005; Shiner & Modood, 2002; Sutton Trust, 2004; Zimdars, 2007a, 2007b). Additionally, it is possible that differential first degree attainment by social class is not purely meritocratic either. Indeed, Smith and Naylor (2005) found that controlling for age, gender and A-level grades there remained differences in degree attainment by social class and school type, with independent school and higher social class graduates faring best.¹¹⁵ Their coefficients for social class were generally not statistically significant, although the analysis was based on virtually complete data rather than a random sample. Thus social class has an essentially primary effect on entry to postgraduate study.

Secondly, simple bi- and trivariate associations, as presented in this chapter, could mask underlying effects which are only visible in a complicated multi-way table. In other words, Figure 6.6c could apply: social class affects progression both through academic factors and independently, with the key question being the strength of each influence. To isolate the effect of social class once a range of socio-demographic and academic factors are controlled for, some form of multivariate statistical model is required. Students in higher education are 'nested' in institutions and also in subjects, so a model which takes this structuring of the experience into account will provide a more definitive picture of the patterning of progression to postgraduate study and the role (if any) of social class within this. A hierarchical or multilevel regression, with progression to postgraduate study as a

¹¹⁵ There are similar findings regarding degree results and ethnicity (Broecke and Nicholls, 2007; Leslie, 2005)

binary outcome variable and a range of socio-demographic and academic predictor variables is the appropriate functional form. Fitting such models and interpreting their output will form part of Chapter 7.

There is a third reason why the results presented here do not provide certainty that the relationship between social class and postgraduate study is equitable. This involves a slightly different take on equity, access to postgraduate study and social class, relating to *choice*. Entry to postgraduate study involves a choice for both parties, the institution and the student. The institution chooses whether or not to accept a student onto a postgraduate course. However the relationship between supply and demand varies widely across postgraduate courses. The availability of places on some courses is constrained by quotas, funding and/or practical constraints. For instance, institutions offering PGCE courses supported by the Teacher Development Agency are funded for a specific number of places. Each student also needs to be placed in partner schools for teaching practice, representing a practical limit on the number who can be admitted. In addition to such supply-side restrictions there are also demand-side differences. In England in 2007 for instance there were 2.25 applicants for every primary PGCE place, but only 1.25 for each secondary design and technology PGCE place (source: my calculations from GTTR, 2008). Many masters degrees have little effective constraint on the number of students they may admit beyond the number of applicants who can be attracted and who are able to find funding for tuition fees (either from their own pocket or a sponsor). Moreover, unlike post-18 transitions, where increasingly progression to higher education for those attempting A-levels or equivalent is a *non*-decision (e.g. Reay *et al*, 2005; Roberts, 2006; Wolf, 2002), postgraduate study is one of a number of options available to a newly-minted graduate and is far from an automatic choice.

Postgraduate study might be a positive decision on the part of a graduate, seen as a means of acquiring further advantage in a crowded labour market or opting for a career

which requires a postgraduate qualification. Alternatively it could be a ‘negative’ decision, taken in the face of impending underemployment or unemployment. It could simply be procrastination or a delay of entry to the labour market as a lifestyle choice. The *meaning* of continuation to postgraduate study is thus likely to vary according to students’ academic and social characteristics and the type of course onto which they progress. Ideally, a sociological investigation of such motivations and their link to graduates’ backgrounds would proceed via qualitative case studies of graduates as they make their decisions, perhaps along the lines of Reay *et al*’s study of post-18 choices.¹¹⁶ Although that is outside the scope of this thesis, the destinations dataset contains some data on graduates’ motivations for pursuing postgraduate study which can be investigated in terms of academic and socio-demographic differences. This will also be covered in Chapter 7, where the results for the destinations dataset will be compared to those for the online survey dataset, where an identical question was asked of current postgraduates.

Before extending the analysis, it is worth briefly considering the implications of the results presented for sociological theories which relate social class to educational opportunity, attainment and onwards to social mobility and reproduction. On the face of it, those theories which state that the effect of background variables decline, if not entirely disappear across the educational career (e.g. Blossfeld and Shavit, 1993; Hansen, 1997; Mare, 1980) are vindicated. There are some social class differences, but they are smaller and less consequential than at previous levels and are accounted for in part by academic factors. However the findings might appear to go against the grain of other literature which sets out a hypothesis of ‘maximally maintained’ inequality or ‘credential inflation’. Here one would expect to see the extension of educational opportunity to the disadvantaged only where higher class groups are approaching saturation point at a given educational level (Raftery and Hout, 1993; Blossfeld and Shavit, 1993). That there has been rapid expansion

¹¹⁶ Such a study is proposed as a fruitful area for further research in Chapter 9.

in postgraduate education in the UK, apparently coupled, on the evidence presented here, with relatively minor social class disadvantage, suggests that inequality is *not* being maximally maintained. In fact one would expect to find greater inequality in the postgraduate transition precisely *because* there has been expansion in undergraduate education (approaching saturation for higher social classes).

The two major competing theories which aim to explain the causal processes generating educational inequality (and its link to social reproduction) are the Bourdieusian theory of capitals; and rational action theory, especially as proposed by Goldthorpe. Neither of these is explicitly invalidated by the findings, although neither is vindicated either. In the structuring of postgraduate progression for the different social classes through subject and institution there are echoes of Bourdieu's work on the French higher education system, with its formalised hierarchy of institutions and informal hierarchy of subjects (Bourdieu, 1988, 1996; Bourdieu and Passeron, 1979). The institutional dimension is also highlighted in Reay *et al's* (2005) application of Bourdieu's theories to the English case. One might expect, from a Bourdieusian perspective, a greater degree of class inequality in progression to research degrees and perhaps *within* subject areas. However the trend for higher class students to eschew teacher training whilst lower class students exhibit the opposite tendency is consistent with Bourdieu and Passeron's (1979) argument that higher education is, for lower-class students, a precarious opportunity for social mobility. The teaching profession is a 'safe' choice for achieving this. It recalls Zweigenhaft's (1993) finding that less advantaged students turn to employment in the education system as that is where their accumulated capital (which for them is principally cultural) is most highly valued. This theory is echoed in Savage *et al's* (1992) identification of distinct managerial and professional middle classes in the UK, with credentials the route into the latter but (hitherto at least) less so for the former.

However the finding that there is a reversal in the usual class inequalities for progression to PGCE study is also consistent with the RRA hypothesis. Here a teaching career is perhaps less of a risk for a working-class graduate, compared with alternatives (particularly the higher professions). For a service-class graduate, who, according to Goldthorpe's version of rational action theory will be motivated principally by avoidance of downward mobility (Ehrenreich's (1989) 'fear of falling'), teaching, itself downwardly mobile as a profession, would tend to be avoided. On the other hand, the finding that class inequality in progression to taught higher degrees is not extensive appears more ambiguous viewed from a RRA perspective. There are tangible risks in taking such a course through both the direct costs (fees and living expenses) and the potential earnings foregone through more time out of the labour market. These *could* be offset by increased earning capacity or likelihood of upward mobility for the holder of a masters degree; but it is by no means guaranteed. The uncertainty of benefitting from a masters qualification (at least taken immediately following the first degree) would also apply to service-class graduates, but of course the risk is smaller. On this basis, a greater social class difference would be expected.

Conclusion

In this chapter I have investigated the simple bi- and trivariate relationship between social class, immediate progression to postgraduate study and a number of candidate confounding factors known to structure higher education's student demographic. Social class inequalities in the rate of progression to postgraduate study were found which were consistent over time and in the usual direction, except that for PGCEs this relationship was inverted, with Class 7 graduates entering this qualification at a greater rate than their Class 1 peers. Class differences were not particularly large however and were certainly less

striking than gender differences in progression. Alternative measures for socio-economic background (fee liability and secondary school type) showed some additional effect, but again, these were not large. Most notably, social class differences dissipated substantially controlling for each of three separate 'academic' factors, namely the discipline, degree classification and institution attended for the first degree.

These findings were reviewed against the sociological theories and research introduced in Chapter 3. It was noted that the relationship between social class, institution, subject of study and progression to postgraduate study could still be a 'classed' one since class could affect attainment and 'selection' into different institutions and subjects. It could affect the choice process which precedes the outcomes the destinations dataset reports. There is also a possibility that simple bi- and trivariate analyses obscure more complex patterns within the dataset in relation to social class and postgraduate participation.

The following chapter extends the analysis of progression to postgraduate study begun here by fitting multivariate statistical models to the destinations dataset. It addresses the institutional structuring of higher education study but also considers aspects of choice. This is accomplished by recognising that there are several different possible graduate destinations (employment, unemployment, different kinds of study) which are not easily ranked; and by investigating the reported motivations of those in postgraduate study.

7 Entering postgraduate study: models and motivations

Introduction

The analysis in Chapters 5 and 6 showed a clear, although not especially strong relationship between social class and immediate progression to postgraduate study at the aggregate level. It would appear, however, that this relationship can be accounted for by various academic factors. Social class differences in progression to postgraduate study seem to be related to social class differences in degree classification obtained, first-degree institution attended and the subject studied for the first degree. Taking each of these factors into account substantially reduces the apparent effect of social class, at least for progression to a higher degree. Although this does not rule out the possibility of social class inequalities in entry to postgraduate study, it suggests that any effects are likely to be indirect. Some class differences may arise through ‘tracking’, whereby postgraduate participation is strongly affected by the place and nature of undergraduate study. Others might be considered legitimate, if they simply reflect differential attainment.

In this chapter I will apply more sophisticated statistical techniques to the destinations dataset to verify the conclusions of Chapter 6 that the effect of social class appears to decline in the postgraduate transition. Comparatively simple bi- and trivariate associations may obscure this relationship and clarity of presentation and interpretation places a limit on the number of dimensions which can be presented in a contingency table. Multivariate statistical models which can, at least in principle, contain any number of explanatory variables in relation to a particular outcome are usually preferred. Another reason for introducing statistical models is to investigate the influence of clustering. Previous chapters demonstrated that there is a structure to higher education qualifications in which institution and subject discipline feature prominently. In particular, progression

rates to postgraduate study and socio-demographic profiles vary considerably across both institutions and subjects. Failing to recognise this structure – and the way in which it incorporates social class differences in patterns of first-degree study – could lead to false conclusions. For this reason, a hierarchical or multilevel model will be fitted which attempts to take into account within-institution similarities in progression rates. The second and third sections of the chapter describe the fitting of statistical models in order to investigate the relationship between social class and progression to postgraduate study.

I will also consider two further potential manifestations of social class effects on entry to postgraduate study: different motivations for entering postgraduate study and the social class background of current postgraduates. In the third section I will examine the reasons for entering postgraduate study reported by postgraduates in both the destinations dataset and the online survey. This will help to determine whether the appearance of similarity in progression rates by social class conceals differences in *motivation* – i.e. what it *means* to pursue postgraduate study. There are good theoretical grounds, related to the debate between RRA theory (Goldthorpe) and cultural capital approaches (Bourdieu) discussed in Chapter 3, to suppose there will be such social class differences. Progression to postgraduate study is one among several possible ‘destinations’ open, in principle, to the newly-minted first-degree graduate. This is not a ‘free’ choice since it is inevitably conditioned by a range of considerations, including *inter alia*, the labour market value of a graduate’s qualification, their domestic situation, personality, finances - and perhaps more abstractly, various sociological factors such as social class, gender, ethnicity, sexuality, age and so on. Nonetheless, the decision to progress to postgraduate study rather than (say) take up full-time employment is qualitatively different to the decision to continue in study for those completing post-18 qualifications. It is likely to be more purposive.¹¹⁷

¹¹⁷ There will of course be some postgraduates who have simply ‘drifted’ into it (indeed many academics report having ended up in an academic career in this way!) because they did not know what else to do or wanted to avoid employment. However the scarcity of postgraduate funding and the relatively low rate of

The destinations dataset contains some variables which catalogue the reported motivations of those progressing to postgraduate study which can be disaggregated along various academic and socio-demographic lines. This data on motivations is compared with results from the online survey dataset, where current postgraduates were asked an identical set of questions. As with rates of immediate progression to postgraduate study, there appears little difference between the social classes in motivations in either dataset, which is contrary to the prediction of sociological theories about educational transitions.

A more general comparison of the social class profiles between the two datasets comprises the penultimate section. As those progressing immediately to postgraduate study are just a subset of all postgraduate students, considering the background of those currently enrolled on a postgraduate course gives a much broader view of the effect of social class. Here, conversely, it will become evident that there are quite large social class differences between the two levels if the comparator is the larger set of all postgraduates. In the online survey dataset there is a marked shift in social class composition in favour of children of professional/managerial parents. On the face of it then, later transitions to postgraduate study seem to be strongly associated with parental social class, even if this does not really hold for immediate transitions.

Thus the chapter seeks to test out the conclusion of Chapter 6 that the effects of social class on progression to postgraduate study are small, except in the case of entry to PGCEs. Something of a paradox is evident: there appears little social class difference in immediate transition to or motivation to enter postgraduate study, but quite substantial social class differences between the postgraduate student body as a whole and a comparator group of first-degree graduates. The chapter concludes with a discussion of how this situation might be comprehended. This will cover questions of the measurement of social class and suggest some avenues for further exploration of the online survey

continuation in comparison to labour market entry for first-degree graduates means that further study might tend to be a 'positive' decision (although see also footnote 130).

dataset to validate the ‘headline’ finding of a shift to exclusivity. I will also consider issues of ‘path dependency’ in access to postgraduate study and suggest that the patterns observed in respect of social class can be conceived of as ‘weak’ meritocracy.

I begin, however, by fitting models to investigate the association between academic and socio-demographic factors and a graduate’s first destination.

Modelling progression to postgraduate study: a multinomial approach

Whether or not a first-degree graduate heads to postgraduate study can be conceived of as an outcome for which there are potentially a number of explanatory factors. A model can be created in which the outcome variable represents whether or not a student progressed to postgraduate study (or a particular kind of postgraduate study) and one or more candidate explanatory variables are postulated as accounting for the value this outcome variable takes. There is a drawback though if fitting a simple logistic regression model to predict (say) progression to a higher degree by research: this assumes all other outcomes should be treated equally, which in this case is not plausible. It would be reasonable to presume, for instance, that progression to a research degree has more in common with progression to a taught higher degree as a first destination than with entering employment.

A more suitable approach is to fit a multinomial logistic regression model which treats one outcome as a baseline category and then simultaneously reports the effects of a set of explanatory variables on the pair of the baseline and each other outcome category. For the purposes of modelling, the outcome variable has been created as described in Table 7.1. The baseline category is ‘full-time employment’, since this represents the most common outcome (representing about 54% of cases), the usual convention for selecting the baseline (Agresti, 2002).

One limitation with the outcome variable is that it is impossible to determine the graduate's *intention*. Although historically in studies of education and social mobility actual outcomes have been of greater interest than intentions, there is an important distinction to be made between *failed* ambition and *no* ambition. In the case of the 'discouraged worker' for instance, an individual may intend to enter full-time employment but, finding no acceptable position, return to study instead. This is very different from someone who enters postgraduate study as a positive career choice (e.g. to train as a schoolteacher) who is in turn different from the 'drifter' mentioned previously. It would be useful to know whether graduates had applied for postgraduate study but been rejected or unable to secure funding, but no data is available. For the purposes of investigating the link between social class background and access to postgraduate study, knowing a graduate's destination is most important. However this knowledge, plus some information about their motivation if entering postgraduate study does not entirely mitigate for the lack of data on intention. So although using a multinomial outcome variable is preferable to repeating models using different binary outcome variables, it inevitably gives a somewhat partial view of the process of reaching a 'first destination' after graduation.

I begin with a single-level multinomial regression model which contains academic predictors only (Model A).¹¹⁸ The analysis in Chapter 6 suggested that academic factors such as subject of study, type of institution attended for the first degree and the classification of degree obtained play a major role in accounting for variation in progression to postgraduate study. Apparent social class differences in progression to different kinds of postgraduate study are largely, although not entirely, erased when controlling for such

¹¹⁸ Models A and B omit graduates in subject Medicine and Dentistry. When this group was included in the model an element of volatility was introduced, with very large relative risk ratios reported. Models which include Medicine and Dentistry are reproduced in Appendix 8. Subjects with relatively small numbers of graduates have also been collapsed into single categories. This affects Engineering, Technology, and Architecture, Building and Planning; and also European Languages and other overseas languages. There is no substantive difference in the results of the two models, except for changes in the effect of having an 'unclassified' degree on progression (which is related to the omission of Medicine and Dentistry, where degrees are often not classified).

Table 7.1: Derivation of outcome variable destination

variable: outcome	variable: study	Destination of Leavers from HE (2002/03 – 2004/05) variable: activity	variable: typequal	Derived variable: destination
UK paid full-time employment; UK self-employed	-	Full-time paid work only (including self-employment)	-	Full-time employment
UK paid-part-time employment; UK unpaid employment; Employment overseas; Other employment in UK; Not available for employment; Others	-	Part-time paid work only; Voluntary/unpaid work only	-	Other destination
Undertaking study or training	Higher degree by research	Further study only; Work and further study	Higher degree by research	Higher degree by research
Undertaking study or training	Higher degree – taught	Further study only; Work and further study	Higher degree – taught	Taught higher degree
Undertaking study or training	Diploma or Certificate (including PGCE) [where profsoct=1]	Further study only; Work and further study	Postgraduate diploma or certificate [where proftrai=1]	PGCE
Undertaking study or training	Diploma or Certificate (including PGCE)[where profsoct=0]	Further study only; Work and further study	Postgraduate diploma or certificate [where proftrai=0]	Other postgraduate qualification
Undertaking study or training	First degree course; Private study; Other study or training	Further study only; Work and further study	First degree; Other diploma or certificate; Professional qualification; Other qualification; Not aiming for a qualification	Other destination
Assumed to be unemployed	-	Assumed to be unemployed	-	Assumed to be unemployed

Table 7.2: Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model A)

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Subject of study</i>										
Social Studies					(reference category)					
Subjects Allied to Medicine	2.128 ***	0.109	0.270 ***	0.007	0.267 ***	0.013	0.312 ***	0.014	0.332 ***	0.009
Biological Sciences	7.229 ***	0.324	1.113 ***	0.020	2.182 ***	0.061	0.984 n.s.	0.033	1.042 n.s.	0.022
Agriculture & Veterinary Sciences	2.255 ***	0.221	0.555 ***	0.028	0.391 ***	0.038	0.510 ***	0.040	0.644 ***	0.031
Physical Sciences	13.360 ***	0.600	1.315 ***	0.027	1.830 ***	0.062	0.762 ***	0.033	1.336 ***	0.032
Mathematical and Computing Sciences	2.803 ***	0.137	0.784 ***	0.016	1.162 ***	0.038	0.489 ***	0.020	1.538 ***	0.030
Engineering, Technology, Architecture, Building	3.584 ***	0.170	0.596 ***	0.013	0.277 ***	0.014	0.796 ***	0.028	1.088 ***	0.023
Law	1.425 ***	0.110	1.422 ***	0.034	0.325 ***	0.025	12.781 ***	0.350	1.030 n.s.	0.032
Business & Administrative Studies	0.404 ***	0.031	0.432 ***	0.009	0.332 ***	0.013	0.486 ***	0.017	0.800 ***	0.016
Mass Communications & Documentation	0.425 ***	0.628	0.447 ***	0.016	0.355 ***	0.024	0.565 ***	0.032	1.160 ***	0.032
Linguistics, Classics etc.	1.274 **	0.078	1.134 ***	0.024	3.293 ***	0.096	1.171 ***	0.058	1.160 ***	0.029
Foreign Languages etc.	0.811 *	0.667	0.735 ***	0.021	1.908 ***	0.074	1.341 ***	0.060	1.024 n.s.	0.034
Historical & Philosophical Studies	2.169 ***	0.117	1.385 ***	0.028	2.509 ***	0.076	1.888 ***	0.063	1.387 ***	0.033
Creative Arts & Design	0.803 **	0.058	0.701 ***	0.015	1.472 ***	0.045	0.911 **	0.030	1.507 ***	0.029
Education	0.298 ***	0.434	0.165 ***	0.008	1.576 ***	0.053	0.550 ***	0.026	0.332 ***	0.012
Combined	2.398 ***	0.156	0.902 ***	0.026	1.885 ***	0.076	1.436 ***	0.056	1.153 ***	0.034

Table 7.2 (continued): Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model A)[†]

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed		
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	
<i>Institution type</i>											
Other pre-1992 universities											
Specialist HE colleges	0.184 ***	0.029	0.627 ***	0.024	(reference category)	0.481 ***	0.029	2.664 ***	0.108	1.011 n.s.	0.030
Generalist HE colleges	0.195 ***	0.013	0.488 ***	0.011		1.203 ***	0.027	0.978 n.s.	0.030	0.924 ***	0.017
Post-1992 universities	0.280 ***	0.008	0.638 ***	0.008		0.686 ***	0.012	1.112 ***	0.021	1.105 ***	0.013
Russell Group	1.299 ***	0.024	0.975 *	0.011		0.926 ***	0.016	1.417 ***	0.026	1.031 *	0.017
<i>Degree classification</i>											
I					(reference category)						
II(i)	0.221 ***	0.004	0.587 ***	0.008		1.119 ***	0.026	0.859 ***	0.019	1.134 ***	0.020
II(ii)	0.049 ***	0.002	0.414 ***	0.006		0.960 n.s.	0.023	0.618 ***	0.015	1.467 ***	0.026
III/Pass	0.016 ***	0.002	0.260 ***	0.008		0.665 ***	0.027	0.491 ***	0.021	1.962 ***	0.044
Unclassified	0.080 ***	0.006	0.197 ***	0.008		1.067 n.s.	0.048	0.813 ***	0.034	1.492 ***	0.041
<i>Academic year</i>											
2001/02					(reference category)						
2002/03	0.848 ***	0.020	0.999 n.s.	0.013		1.057 **	0.021	0.589 ***	0.011	1.013 n.s.	0.013
2003/04	0.818 ***	0.019	0.991 n.s.	0.013		1.127 ***	0.021	0.582 ***	0.011	0.933 ***	0.012
2004/05	0.762 ***	0.018	0.955 ***	0.012		1.154 ***	0.022	0.538 ***	0.010	0.958 **	0.012

[†] RRR = Relative Risk Ratio. Model statistics: pseudo $r^2 = 0.057$; $\chi^2 < 0.001$; log likelihood = -1,065,291. Source: HESA Student Record 2001/02 – 2004/05, First Destinations Survey 2001/02 and DLHE 2002/03 – 2004/05. Parameter significance: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (this notation applies to all subsequent models too).

academic factors. Table 7.2 reports the coefficients estimated for Model A.¹¹⁹ The pseudo- r^2 statistic is small (0.057) suggesting that much of the variation in first destination is not accounted for by the explanatory variables included in the model, although the robustness and utility of this measure is a source of dispute in the literature on statistical methodology (Agresti, 2002; Field, 2000).

Essentially, Model A confirms the conclusions drawn from the bivariate analysis of variation in first destination outcome that there is substantial variation in progression rates across subject of study, type of institution attended and degree classification obtained. The model suggests that progression to a higher degree by research is strongly associated with studying Physical or Biological Sciences or Technology, with graduates in Education, Business & Administrative Studies, Mass Communications & Documentation and Medicine & Dentistry being substantially less likely to follow this route. Obtaining a first-class honours degree and attending a pre-1992 university, particularly a Russell Group institution also strongly predict progression to a research degree as compared to full-time employment as a first destination. Evidently there is an element of ‘path dependency’, with some subject-institution combinations providing a ‘track’ to postgraduate study and others not.

Biological and Physical Sciences also feature as subjects sending a high proportion of graduates to taught higher degrees, although inter-subject differences are less marked for this destination than for research degrees. Historical & Philosophical Studies, Law, Linguistics, Classics etc. and Social Studies also figure. Health-related subjects, Business & Administrative Studies and Education are shown in the model to have much weaker association with progression to taught higher degrees. These are vocationally-focussed disciplines, with direct graduate entry to the labour market the norm. The classification of first degree and the type of institution in which it was attained follow a similar pattern to that seen

¹¹⁹ The outcome of ‘other destinations’ is omitted from Table 7.2. This is mainly for reasons of space, although it also a ‘catch-all’ category, making interpretation of the results more difficult.

for progression to research degrees. Degree classification is less important for progression to a PGCE, although subject of study shows greater variation here.¹²⁰

The multivariate multinomial model highlights some interesting contextual considerations which were not evident from the bi- and trivariate analysis. Graduates obtaining first-class honours degrees and those attending pre-1992 universities are more likely to enter postgraduate study as an apparent alternative to direct entry to the labour market, since they are also comparatively less likely to be unemployed. On the plausible assumption that such graduates are the most sought-after for employers, I propose two possible explanations. First, it is evidence of those with an academic (as opposed to vocational) disposition and talent preferring an educational career reflecting those characteristics and within which postgraduate study is intrinsically and extrinsically worthwhile. Second, it is evidence of the already socially and educationally privileged seeking to maximise that advantage through obtaining further qualifications which will accelerate their career progression in the labour market and/or secure entry to professions with better pay and conditions. Of course these two potential explanations are not mutually exclusive.

A range of socio-demographic factors can be added to the model to investigate whether background effects continue to influence progression to postgraduate study controlling for the academic factors in Model A. Table 7.3 gives the coefficients from a second multinomial logistic regression (Model B) which added social class, gender, age and first-degree liability for tuition fees as explanatory variables. Although the pseudo- r^2 statistic was again small (0.066), the model was a significantly better fit ($p < 0.01$) than that containing the academic factors alone. This suggests socio-demographic factors are a salient influence on immediate transition to postgraduate study.¹²¹

¹²⁰ Entry to a PGCE is usually conditional on holding a degree in a subject which is part of the National Curriculum.

¹²¹ A further model was fitted (not reported here) which included the same socio-demographic factors except for social class. The model which included social class was a significantly better fit ($p < 0.001$).

Table 7.3: Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model B)

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Subject of study</i>										
Social Studies										
Subjects Allied to Medicine	3.195 ***	0.196	0.308 ***	0.011	(reference category)	0.285 ***	0.017	0.276 ***	0.391 ***	0.015
Biological Sciences	8.823 ***	0.477	1.093 ***	0.024		2.179 ***	0.073	0.957 n.s.	1.080 **	0.029
Agriculture & Veterinary Sciences	2.761 ***	0.348	0.534 ***	0.038		0.406 ***	0.053	0.696 ***	0.667 ***	0.047
Physical Sciences	14.544 ***	0.782	1.264 ***	0.031		2.064 ***	0.083	0.753 ***	1.315 ***	0.039
Mathematical and Computing Sciences	2.822 ***	0.165	0.736 ***	0.018		1.640 ***	0.065	0.521 ***	1.302 ***	0.033
Engineering, Technology, Architecture, Building	3.507 ***	0.200	0.527 ***	0.014		0.393 ***	0.025	0.897 *	0.927 **	0.025
Law	1.416 ***	0.133	1.392 ***	0.010		0.338 ***	0.029	12.664 ***	1.015 n.s.	0.039
Business & Administrative Studies	0.360 ***	0.037	0.408 ***	0.011		0.354 ***	0.017	0.506 ***	0.793 ***	0.021
Mass Communications & Documentation	0.449 ***	0.087	0.513 ***	0.022		0.366 ***	0.031	0.689 ***	1.221 ***	0.044
Linguistics, Classics etc.	1.484 ***	0.107	1.157 ***	0.029		2.911 ***	0.102	1.616 ***	1.230 ***	0.039
Foreign Languages etc.	0.978 n.s.	0.093	0.738 ***	0.025		1.696 ***	0.078	1.297 ***	1.021 n.s.	0.042
Historical & Philosophical Studies	2.205 ***	0.141	1.298 ***	0.030		2.391 ***	0.087	1.820 ***	1.297 ***	0.038
Creative Arts & Design	0.947 n.s.	0.085	0.701 ***	0.019		1.674 ***	0.063	0.899 *	1.501 ***	0.039
Education	0.301 ***	0.060	0.162 ***	0.010		1.363 ***	0.058	0.564 ***	0.316 ***	0.016
Combined	2.908 ***	0.217	0.906 **	0.031		1.929 ***	0.093	1.455 ***	1.141 **	0.043
<i>Institution type</i>										
Other pre-1992 universities										
Specialist HE colleges	0.069 ***	0.023	0.502 ***	0.029	(reference category)	0.276 ***	0.027	1.639 ***	0.926 n.s.	0.040
Generalist HE colleges	0.156 ***	0.014	0.443 ***	0.012		1.030 n.s.	0.028	0.802 ***	0.866 ***	0.021
Post-1992 universities	0.228 ***	0.009	0.590 ***	0.009		0.577 ***	0.013	0.953 *	0.972 n.s.	0.015
Russell Group	1.349 ***	0.028	0.973 **	0.013		0.925 ***	0.018	1.451 ***	1.061 ***	0.017

Table 7.3 (continued): Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model B)[†]

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Degree classification</i>										
I										
II(i)	0.229 ***	0.005	0.605 ***	0.009	(reference category)		0.883 ***	0.024	1.188 ***	0.026
II(ii)	0.048 ***	0.002	0.426 ***	0.008	1.175 ***	0.327	0.641 ***	0.019	1.476 ***	0.035
III/Pass	0.011 ***	0.002	0.231 ***	0.009	1.089 **	0.326	0.537 ***	0.031	1.870 ***	0.055
Unclassified	0.080 ***	0.007	0.213 ***	0.012	0.869 **	0.440	0.790 ***	0.047	1.375 ***	0.053
<i>Academic year</i>										
2001/02					(reference category)					
2002/03	0.827 ***	0.022	0.979 n.s.	0.016	1.003 n.s.	0.024	0.543 ***	0.013	0.993 n.s.	0.017
2003/04	0.806 ***	0.022	0.952 **	0.015	1.107 ***	0.026	0.557 ***	0.013	0.916 ***	0.016
2004/05	0.748 ***	0.021	0.915 ***	0.015	1.099 ***	0.025	0.502 ***	0.012	0.910 ***	0.015
<i>Social class</i>										
1 Higher managerial/professional					(reference category)					
2 Lower managerial/professional	0.893 ***	0.022	0.883 ***	0.013	1.063 **	0.025	0.816 ***	0.018	0.891 ***	0.015
3 Intermediate occupations	0.886 ***	0.030	0.890 ***	0.018	1.199 ***	0.035	0.796 ***	0.024	0.964 n.s.	0.020
4 Small employers etc	0.586 ***	0.076	1.051 n.s.	0.051	1.470 ***	0.089	1.056 n.s.	0.078	1.127 *	0.054
5 Lower supervisory/technical	0.981 n.s.	0.034	0.889 ***	0.018	1.304 ***	0.038	0.745 ***	0.024	0.979 n.s.	0.021
6 Semi-routine occupations	0.998 n.s.	0.042	0.933 **	0.022	1.319 ***	0.044	0.812 ***	0.030	1.077 **	0.026
7 Routine occupations	0.952 n.s.	0.076	0.972 n.s.	0.040	1.583 ***	0.081	0.933 n.s.	0.056	1.277 ***	0.047
<i>Gender</i>										
Male					(reference category)					
Female	0.589 ***	0.012	0.803 ***	0.009	2.288 ***	0.044	1.250 ***	0.022	0.610 ***	0.008
Age	1.049 ***	0.002	1.030 ***	0.001	1.018 ***	0.002	1.030 ***	0.002	1.036 ***	0.001
<i>Liability for first degree tuition fees</i>										
Not liable					(reference category)					
Liable	0.919 ***	0.018	1.155 ***	0.013	0.973 n.s.	0.016	1.045 *	0.018	0.959 **	0.012

[†] Model statistics: pseudo $r^2 = 0.066$; $\chi^2 < 0.001$; log likelihood = -95,850. Source: as Table 7.2 (which remains the same for Tables 7.4 – 7.6)

Generally speaking, including socio-demographic factors tends to reduce the inter-subject differences in progression to postgraduate study but increase differences across institutional type, although the direction of effects remains essentially unchanged between the two models, as do the coefficients for degree classification. The most important consideration is whether there remains any social class effect on progression to postgraduate study in the multivariate model.¹²² The results indicate that social class has some effect on progression to postgraduate study independent of the other factors, but that its influence is relatively weak, which is consistent with the literature on the declining influence of background effects in later educational transitions (see Chapter 3). For progression to a research degree, the coefficients for Class 5 – 7 graduates show no significant difference (and very little substantive difference) to those of the reference category, Class 1 graduates. Class 2, 3 and 4 graduates are significantly less likely than those in Class 1 to enter a research degree as a first destination, but the scale of the difference is fairly unremarkable. A similar pattern is seen for progression to a taught higher degree. For progression to a PGCE however, the direction and strength of the relationship between social class and PGCE entry does not seem to diminish, with a monotonic increase in the relative risk of progression as one goes ‘down’ the social class ‘hierarchy’.

In essence then, the multinomial model corroborates the findings in Chapter 6, although the controls introduced in the multivariate model tend further to suppress the direct effect of social class. Basically, there is little influence on social class in access to a higher degree, but there are class differences in entry to PGCE, with this transition most likely for those from lower social classes, holding other factors constant. Thus the direct influence of social class has indeed declined from previous transitions, but there is likely to be an indirect

¹²² Interaction terms were added to Model C to test out three interactions which appeared important in Chapter 6: social class × degree classification; social class × gender; and social class × secondary school type. Almost all of the parameters were not statistically significant and there was very little of any substantive interest in these results.

effect through attainment and, in particular, institution attended. I develop this analysis in the next section.

It is instructive to compare the effect of another important background variable – gender – against that of social class. Whilst there are distinctively different distributions of men and women across subject of study and some differences in degree-level attainment in the dataset, there remains a significant and substantial effect of gender on progression to postgraduate study. So whilst the models suggest there is no significant difference between the likelihood of men and women being unemployed after their degree, women are more likely to enter a PGCE or other postgraduate qualification and men a higher degree (especially a research degree), net of other factors. Put crudely, whilst the association between social class and progression to postgraduate study is relatively weak, that between progression to postgraduate study and gender is quite strong.

The multinomial logistic regression models have largely reinforced the conclusions drawn in Chapter 6: in progression to postgraduate study as a first destination at least, academic factors appear to be paramount and the direct effect of social class is relatively minor, being most noticeable in respect of entry to PGCE programmes. In contrast to social class differences, gender differences in progression were more pronounced in the models. As noted previously, although this conclusion suggests that there is no *additional* social class effect in progression to postgraduate study, it does not mean that class is not implicated in the *process*. If social class is salient in the sorting of undergraduates into different (kinds of) universities and colleges, then it does affect progression to postgraduate study.¹²³ The mechanism would be indirect, but, as was the case with the English secondary education system of the recent past (Halsey *et al*, 1980; Turner, 1960), no less important.

¹²³ A multinomial logistic regression model which replicated that in Table 7.3 was fitted, with institution omitted as a predictor. Social class was a significant variable in this model, with its effect being a little stronger.

Modelling progression to postgraduate study: a multilevel approach

If first-degree institution (or subject of study) is implicated in the relationship between social class and entry to postgraduate study then it is worthwhile building a model of progression to postgraduate study which attempts to deal with the location of graduates in institutions in a more sophisticated way. The analyses conducted so far have used an ‘institution type’ variable since in a single-level regression model the alternative would be to create a dummy variable for each individual institution. There are 165 institutions in the dataset and so fitting a model including such a variable would be computationally demanding with the output very difficult to interpret. An alternative approach is to use a hierarchical or multilevel statistical model which takes account of the clustering of first-degree graduates in institutions. This approach was adopted by Mastekaasa (2005, 2006) who used a multilevel model to account for clustering by institution in his analysis of graduate level transitions in Norway. It has a longer tradition in educational analyses however. A short explanation of multilevel modelling in relation to education is provided in Appendix 9.

The population of first-degree graduates is clustered, in the sense that groups of graduates have studied together in institutions. The experience of a graduate from the University of Manchester (say) is likely to be quite different to that of a graduate from the University of Oxford, London Metropolitan University or the Royal Northern College of Music. One might conceive of this simply as a difference in facilities, regional factors (cost of living, local labour market) and so on; or as something deeper, such as a difference in culture or ‘institutional habitus’ (Reay, David and Ball, 2001). In Snijder’s and Bosker’s (1999) terms then, the level 2 differences are substantively interesting, rather than simply a nuisance arising from a particular sample design. In considering the (fixed) effect of social class on

progression to postgraduate study, the question is whether any such effects remain once one has accounted for the clustering of graduates in institutions.¹²⁴

Table 7.4: Multilevel null models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05 (Model C)

Term	Higher degree by research		Taught higher degree		PGCE	
	Coeff.	SE	Coeff.	SE	Coeff	SE
Constant (β_{0j})	-4.934	0.119	-2.834	0.031	-3.718	0.076
Level 2 variance ($\sigma^2 u_{0j}$)	1.832	0.240	0.443	0.031	0.803	0.099

A dataset was created for analysis using the statistical package MLwiN¹²⁵ which excluded those cases with missing social class or where social class was recorded as NS-SEC group 8, ‘Never worked and long-term unemployed’.¹²⁶ The ‘second order penalised quaslikelihood’ option for nonlinear estimation was selected, since with a binary outcome variable this has been shown to improve the model’s performance (Goldstein and Rasbash, 1996). Sets of three multilevel logistic regression models were fitted for each of the transitions to a higher degree by research, taught higher degree and PGCE. The first set of models (Model C) was ‘null’, containing only a constant term (β_{0j}) and institution as a level 2 variable (Table 7.4). The models’ constant terms (the ‘intercepts’) estimate correctly that progression to a taught higher degree is a more popular destination than progression to a PGCE, which is in turn more popular than a higher degree by research. There is substantial variation between institutions reported by the model in progression to a higher degree by

¹²⁴ With the right dataset, it would be possible to have a three-level model, with institutions, departments and students. Although one could fit a ‘cross-classified’ multilevel model for subjects and departments (as Mastekaasa does), subjects do not equate to actual departments (physical sciences, for instance, could be taught in one or many organisational units).

¹²⁵ MLwiN is a popular proprietary package specifically for multilevel modelling. It is written by researchers at the Centre for Multilevel Modelling at the University of Bristol where multilevel statistical techniques are developed and refined (see the Centre’s website, <http://www.cmm.bristol.ac.uk/>).

¹²⁶ To enable a like-with-like comparison, this dataset was used for each model presented here, regardless of whether social class was included as an explanatory variable. Analysis of a dataset which did not exclude those with a social class value of missing or Class 8 (for models C and D) gives very slightly different coefficients but does not materially affect the conclusions. The total number of cases (weighted) was 545,300.

Table 7.5: Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05 (Model D)

Explanatory variable	Higher degree by research			Taught higher degree			PGCE					
	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β			
Constant (β_0)	-3.582	0.159		-2.204	0.082		-7.987	0.455				
Level 2 variance ($\sigma^2 u_{0j}$)	0.271	0.042		0.122	0.010		0.491	0.063				
<i>Subject of study</i>												
Medicine		(reference category)			(reference category)			(reference category)				
Subjects Allied to Medicine	1.583	***	0.134	4.870	-0.388	***	0.080	0.678	3.262	***	0.442	26.102
Biological Sciences	2.138	***	0.131	8.482	0.570	***	0.076	1.768	4.857	***	0.439	128.638
Agriculture & Veterinary Sciences	1.170	***	0.171	3.222	0.255	**	0.099	1.290	3.487	***	0.456	32.688
Physical Sciences	2.804	***	0.131	16.511	0.707	***	0.076	2.028	4.610	***	0.440	100.484
Mathematical and Computing Sciences	1.318	***	0.132	3.736	0.387	***	0.076	1.473	4.445	***	0.439	85.200
Engineering	1.777	***	0.132	5.912	0.208	**	0.078	1.231	3.090	***	0.443	21.977
Technology	2.620	***	0.150	13.736	0.332	**	0.105	1.394	3.393	***	0.469	29.755
Architecture, Building & Planning	-0.162	n.s.	0.206	0.850	0.186	*	0.088	1.204	1.987	***	0.478	7.294
Social Studies	0.068	n.s.	0.138	1.070	0.658	***	0.076	1.931	4.105	***	0.440	60.643
Law	-0.211	n.s.	0.152	0.810	0.406	***	0.078	1.501	2.519	***	0.446	12.416
Business & Administrative Studies	-0.734	***	0.159	0.480	-0.132	*	0.078	0.876	3.174	***	0.441	23.903
Mass Communications & Documentation	-0.506	*	0.230	0.603	0.032	n.s.	0.085	1.033	3.251	***	0.446	25.816
Linguistics, Classics etc.	0.251	*	0.139	1.285	0.650	***	0.077	1.916	5.208	***	0.439	182.728
European Languages etc.	-0.140	n.s.	0.166	0.869	0.263	**	0.082	1.301	4.941	***	0.441	139.910
Non-European Languages etc.	0.154	n.s.	0.184	1.166	0.480	***	0.093	1.616	4.332	***	0.448	76.096
Historical & Philosophical Studies	0.682	***	0.135	1.978	0.790	***	0.076	2.203	4.868	***	0.439	130.061
Creative Arts & Design	0.084	n.s.	0.150	1.088	0.223	**	0.078	1.250	4.657	***	0.440	105.320
Education	-0.913	***	0.235	0.401	-0.916	***	0.096	0.400	4.829	***	0.440	125.086
Combined	1.154	***	0.139	3.171	0.531	***	0.080	1.701	4.681	***	0.440	107.878

Table 7.5 (continued): Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05 (Model D)

Explanatory variable	Higher degree by research		Taught higher degree		PGCE	
	β	S.E. (OR)exp β	β	S.E. (OR)exp β	β	(OR)exp β
<i>Degree classification</i>						
I						
II(i)	-1.370	0.020	-0.406	0.015	0.312	1.366
II(ii)	-2.864	0.041	-0.737	0.017	0.200	1.221
III/Pass	-4.259	0.163	-1.296	0.038	-0.079	0.924
Unclassified	-2.803	0.095	-1.898	0.061	0.221	1.247
<i>Institution type (level 2)</i>						
Other pre-1992 universities						
Specialist HE colleges	-2.527	0.397	-0.583	0.079	-0.875	0.417
Generalist HE colleges	-1.696	0.178	-0.923	0.060	0.116	1.123
Post-1992 universities	-1.284	0.129	-0.498	0.046	-0.474	0.623
Russell Group	0.256	0.149	-0.079	0.052	-0.220	0.803

research and to a lesser extent PGCE. Variance across institutions is smaller for progression to taught higher degrees.

The second set of models added academic factors, namely subject of study and degree classification obtained at level 1 and institution type at level 2 (see Table 7.5, Model D). For all three destinations (higher degree by research, taught higher degree and PGCE), the addition of the academic factors as fixed effects reduces the reported variance across institutions, although the rank order remains the same. That is, there is a greater inter-institutional difference in progression to a higher degree by research than a PGCE, which in turn shows greater variation than progression to a taught higher degree. The coefficients for the academic factors themselves tell a familiar story. Graduates with first-class honours are more likely to progress to a higher degree but this does not hold true for progression to a PGCE, where all other classifications except for a Third/Pass are estimated to progress at a greater rate. Turning to subject of study, the results replicate what was found in the simpler analyses and multinomial models, with Biological Sciences, Physical Sciences and Technology sending the largest proportion of their graduates to research degrees, for instance. The coefficients for institution type also confirm patterns observed in Chapter 6 and in the multinomial models. Graduates of pre-1992 universities, particularly those in the Russell Group, are far more likely to progress to higher degrees by research; a similar situation applies to taught higher degrees; however for the PGCE graduates of Generalist HE colleges are most likely to make the transition.

The third set of models (Table 7.6, Model E) adds social class and gender as fixed effects. These additional explanatory variables make little difference to the level 2 variance for any of the three postgraduate destinations. This suggests that much of the variance in progression to postgraduate study by social class and gender is related to the differential distribution of students from different backgrounds across institutions. For progression to a higher degree by research, the social class differentials in progression are tiny, except for (the

Table 7.6: Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05 (Model E)

Explanatory variable	Higher degree by research			Taught higher degree			PGCE			
	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β	
Constant (β_0)	-3.314	0.159		-2.016	0.083		-8.728	0.455		
Level 2 variance ($\sigma^2 u_{0j}$)	0.265	0.041		0.123	0.010		0.464	0.060		
<i>Subject of study</i>										
Medicine		(reference category)			(reference category)			(reference category)		
Subjects Allied to Medicine	1.635	***	0.134	5.129		0.712	3.131	***	0.442	22.897
Biological Sciences	2.168	***	0.131	8.741		1.822	4.802	***	0.439	121.754
Agriculture & Veterinary Sciences	1.217	***	0.172	3.377		1.338	3.388	***	0.456	29.607
Physical Sciences	2.704	***	0.131	14.939		1.996	4.727	***	0.439	112.956
Mathematical and Computing Sciences	1.139	***	0.133	3.124		1.458	4.710	***	0.439	111.052
Engineering	1.554	***	0.133	4.730		1.140	3.502	***	0.443	33.182
Technology	2.516	***	0.151	12.379		1.354	3.612	***	0.469	37.040
Architecture, Building & Planning	-0.301	n.s.	0.206	0.740		1.141	2.245	***	0.478	9.440
Social Studies	0.019	n.s.	0.139	1.019		1.946	4.102	***	0.439	60.461
Law	-0.227	n.s.	0.152	0.797		1.528	2.482	***	0.446	11.965
Business & Administrative Studies	-0.791	***	0.159	0.453		0.875	3.217	***	0.441	24.953
Mass Communications & Documentation	-0.519	*	0.230	0.595		1.046	3.230	***	0.446	25.280
Linguistics, Classics etc.	0.278	*	0.139	1.320		2.006	5.086	***	0.439	161.742
European Languages etc.	-0.098	n.s.	0.166	0.907		1.365	4.823	***	0.440	124.338
Non-European Languages etc.	0.180	n.s.	0.184	1.197		1.667	4.256	***	0.448	70.527
Historical & Philosophical Studies	0.633	***	0.135	1.883		2.214	4.888	***	0.439	132.688
Creative Arts & Design	0.072	n.s.	0.151	1.075		1.269	4.624	***	0.439	101.901
Education	-0.831	***	0.235	0.436		0.427	4.667	***	0.440	106.378
Combined	1.108	***	0.140	3.028		1.723	4.678	***	0.440	107.555

Table 7.6 (continued): Multilevel models of progression to selected postgraduate destinations by full-time first-degree graduates 2001/02 – 2004/05 (Model E)

Explanatory variable	Higher degree by research			Taught higher degree			PGCE			
	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β	β	S.E.	(OR)exp β	
<i>Degree classification</i>										
I										
II(i)	-1.369	***	0.020	0.254	(reference category)		0.289	***	0.028	1.335
II(ii)	-2.913	***	0.041	0.054	(reference category)		0.233	***	0.030	1.262
III/Pass	-4.354	***	0.163	0.013	(reference category)		0.039	n.s.	0.051	1.040
Unclassified	-2.845	***	0.095	0.058	(reference category)		0.257	***	0.065	1.293
<i>Gender</i>										
Male										
Female	-0.481	***	0.021	0.618	(reference category)		0.883	***	0.019	2.418
<i>Social class</i>										
1 Higher managerial/professional	0.008	n.s.	0.024	1.008	(reference category)		0.099	***	0.023	1.104
2 Lower managerial/professional	0.023	n.s.	0.034	1.023	(reference category)		0.221	***	0.029	1.247
3 Intermediate occupations	-0.494	***	0.129	0.610	(reference category)		0.346	***	0.061	1.413
4 Small employers etc	0.144	***	0.034	1.155	(reference category)		0.270	***	0.029	1.310
5 Lower supervisory/technical	0.151	***	0.042	1.163	(reference category)		0.304	***	0.033	1.355
6 Semi-routine occupations	0.096	n.s.	0.080	1.101	(reference category)		0.418	***	0.051	1.519
7 Routine occupations										
<i>Institution type (level 2)</i>										
Other pre-1992 universities										
Specialist HE colleges	-2.534	***	0.396	0.079	(reference category)		-0.896	***	0.217	0.408
Generalist HE colleges	-1.685	***	0.177	0.185	(reference category)		0.050	n.s.	0.186	1.051
Post-1992 universities	-1.287	***	0.128	0.276	(reference category)		-0.526	***	0.156	0.591
Russell Group	0.251	*	0.147	1.285	(reference category)		-0.177	n.s.	0.192	0.838

‘volatile’) Class 4 and only statistically significant for half of the classes.¹²⁷ As was suggested in Chapter 6, it would seem that any ‘raw’ social class differences in progression to a research degree are determined at the point of first-degree entry. The model confirms the results from the earlier analyses that, unlike social class, gender continues to predict progression to a research degree, with women being much less likely than men to make this transition. However the multilevel model estimates social class has more of an effect on progression to both taught higher degrees and PGCEs, controlling for subject of study, degree classification, institution attended and sex. Although differences are not large, those from Classes 2 to 7 are less likely to proceed to a taught higher degree than those from Class 1. Given a smaller institution-level variation in progression, this suggests social class has a greater direct bearing on masters degree entry. Gender is important again, although the strength of the effect is smaller than for research degrees. Perhaps surprisingly given that the majority of masters students are female (54% in 2004/05 – source: postgraduate student dataset), men are again more likely than women to make this transition according to the model, holding other predictors constant. The inversion of the usual social class effect for PGCE is repeated, with Classes 2 to 7 all significantly more likely than those from Class 1 to proceed immediately to postgraduate initial teacher training after graduation, with Class 7 graduates having odds one-and-a-half times that of their Class 1 peers. The effect of gender is, unsurprisingly, strongest for the PGCE transition, with women having odds two-and-a-half times those of men of following this route, controlling for the other factors.

Another set of multilevel models was run (coefficients not reported here) which included only institution at level 2, a constant term and a fixed effect for social class. Comparing the coefficients for social class generated by this model with those from Model E shows a reduction in the size of the estimated effect of social class in Model E for progression to a research degree or a PGCE. In other words, part of the social class effect is accounted for

¹²⁷ Interestingly they suggest that Classes 2, 3, 5, 6 and 7 are *more* likely to progress to a higher degree by research than Class 1 graduates, but only marginally.

by social class differences in subject of study, degree classification and gender. However for transition to a taught higher degree, the social class coefficients actually *increase* for Classes 2 and 3 in Model E and for the other classes change very little. As with the multinomial model, there seems to be a residual, albeit small ‘direct’ effect of social class on entry to masters study. This is perhaps related to the scarcity of funding for taught higher degrees, with access to economic capital being more important in determining progression than to other kinds of postgraduate course.

To summarise, both kinds of statistical model – multinomial and multilevel – have largely confirmed the analysis presented in Chapter 6. Progression to a higher degree by research is principally determined by degree attainment and subject and (especially) institution of first-degree. Gender is also important and proves a much stronger predictor than social class, which, if it has any effect, is indirect through the first-degree institution. Academic factors and gender are also important in determining progression to taught higher degrees and the PGCE, but social class too has some effect here, perhaps at its strongest for entry to masters degrees and, as shown in Chapter 6, showing an ‘inverted’ effect for PGCE entry. Entry to higher degrees appears to be in preference to direct entry to the labour market for many graduates with good degrees from prestigious universities. As suggested in Chapter 6, a plausible explanation for these patterns is that entry to postgraduate study is strongly conditioned at the point of initial entry to undergraduate study. Students in Russell Group and similar institutions are much more likely to proceed to a research degree and somewhat more likely to enter a taught higher degree, with little additional social class effect at the point of graduation. Entering a prestigious institution in the first place is the most important factor. Students from post-1992 and similar institutions are much less likely to enter postgraduate study. Thus there is little changing of ‘track’, the situation being similar to that which Turner (1960) described as ‘sponsored mobility’.¹²⁸ Of course aptitude and disposition for different

¹²⁸ This interpretation is supported by Zimdars’ (2007b) case study of the University of Oxford where there was substantial ‘over’ recruitment from Russell Group institutions at postgraduate level. In a ‘contest mobility’

kinds of study (e.g. pure/academic vs. applied/vocational) will also influence choice of ‘track’, but equally the distribution of these traits across social class are not random: in the Bourdieusian tradition they are further evidence of classed inequality.

Whilst the models confirm the analysis in Chapter 6 as far as the association of different academic and socio-demographic factors with progression to postgraduate study, they do not tell us anything about the motivations, aspirations and calculations of graduates as they consider entering postgraduate study. Perhaps more problematically, they apply only to one small pool of potential entrants to postgraduate study – new graduates. As most entry to postgraduate education does not follow directly from a first degree, the effect of academic and socio-demographic variables on later entry cannot be determined from the destinations dataset.

To attempt to address these shortcomings, Chapter 8 will comprise an analysis of the academic and social characteristics of the current postgraduates who responded to the online survey. Before relating those results however, I consider the reasons given by current postgraduates and, firstly, new graduates for entering postgraduate study and how these relate to their background. As noted above, attitudes, dispositions and motivations are an important part of the overall picture.

Reasons for entering postgraduate study

Whether there are social class differences in the *reasons* for pursuing postgraduate study is an important issue. Two of the principal theories about the relationship between social class and educational progress (RRA and cultural capital theories, discussed in Chapter 3) would predict a tendency among working-class graduates to adopt an instrumental attitude towards their studies, whereas those from service-class backgrounds would be more likely to value

situation there would be more evidence of track-changing at the point of graduation (as Turner argues is the case in the USA).

further study for its own sake. From the perspective of RRA, postgraduate study is only a rational option if there is a high likelihood of success (or a low penalty for failure). For working- and intermediate-class students therefore, postgraduate study is likely to be tied to a specific occupational goal and hence the reasons given for entering further study will reflect this.

For students from relatively privileged backgrounds there is less at stake, since the cost of further study (in terms of the course itself and of foregone earnings) can be more readily met by parents', partners' or one's own resources. Similarly, for cultural capital theorists, an instrumental attitude to study among working-class students derives from a habitus where study must be directed towards a specific utilitarian outcome, rather than being pursued for its own sake, what Bourdieu and Passeron (1979, p. 62) refer to as the "glamour of studies". Conversely, for those from a milieu where higher education or indeed postgraduate study is relatively normal, there is no need to justify or perhaps even consciously to evaluate the decision to enrol on a postgraduate course. Therefore such students are more likely to cite an intrinsic interest in their course, or merely the postponement of entry to the labour market, as reasons for further study.

The First Destinations Survey contains a question intended for those who have proceeded to further study, training or research as a first destination which asks the graduate "why did you decide to undertake further study/training/research?" A range of reasons is suggested (see Appendix 1); respondents can select none, one, many or all of these reasons.¹²⁹ The questions were also asked, in the same format, in the online survey, with the addition of an 'other' category. Thus it is possible to compare the reported motivations of first-degree graduates proceeding to postgraduate study with current postgraduate students, most of whom have not entered immediately following their first degree.

¹²⁹ This question first appeared with the commencement of the DLHE in 2002/03. There is thus no data for 2001/02 graduates.

There are several shortcomings of relying on this data to investigate postgraduates' motivations. Firstly, the categories are fixed and do not allow postgraduates to give their reasons for taking their current course in their own words. One gets no impression of whether they are single-minded, ambivalent or reluctant about entering postgraduate study; how it fits with their broader biographical circumstances; nor whether there are other important reasons for entering further study not listed in the survey. Understanding the cognitive process followed by graduates in progressing to postgraduate study is not really possible using the available data. This is a pity because one of the important sociological debates to which this thesis seeks to contribute concerns whether such decision-making is rational or instinctive (as rehearsed in the discussion of Goldthorpe and Bourdieu's views in Chapter 3). Some form of qualitative research would be required to fully address such questions. An additional drawback of the comparison between the destinations and online survey datasets is that it excludes those who did not enter postgraduate study (since it would be worthwhile knowing what motivates those who were not able to enter postgraduate study or did not seek to).

Besides problems with the nature of the data, there is the familiar problem of missingness. This is relatively rare in the online survey, with 11% of the respondents (7% when weighting is applied) not responding to the questions seeking a reason for entering postgraduate study. The equivalent figure for the destinations dataset is 59%. However a substantial part of the latter is accounted for by differences in the survey method: 84% of those who did not respond completed the DLHE via the telephone version of the survey, where the relevant questions were typically omitted. Nevertheless, there is clear and substantial utility in the analysis since this is the only large dataset available containing data about motivation for pursuing postgraduate study.

Figure 7.1 presents the cross-dataset comparison of reasons for entering postgraduate study (duly weighted). The rank order of the popularity of reasons is identical across the two surveys and there are few differences of note between the two groups. For both groups

Figure 7.1: Comparison of reasons for entering postgraduate study for full-time UK-domiciled first-degree graduates entering postgraduate study 2002/03 – 2004/05 and respondents to the online survey (where a response given)

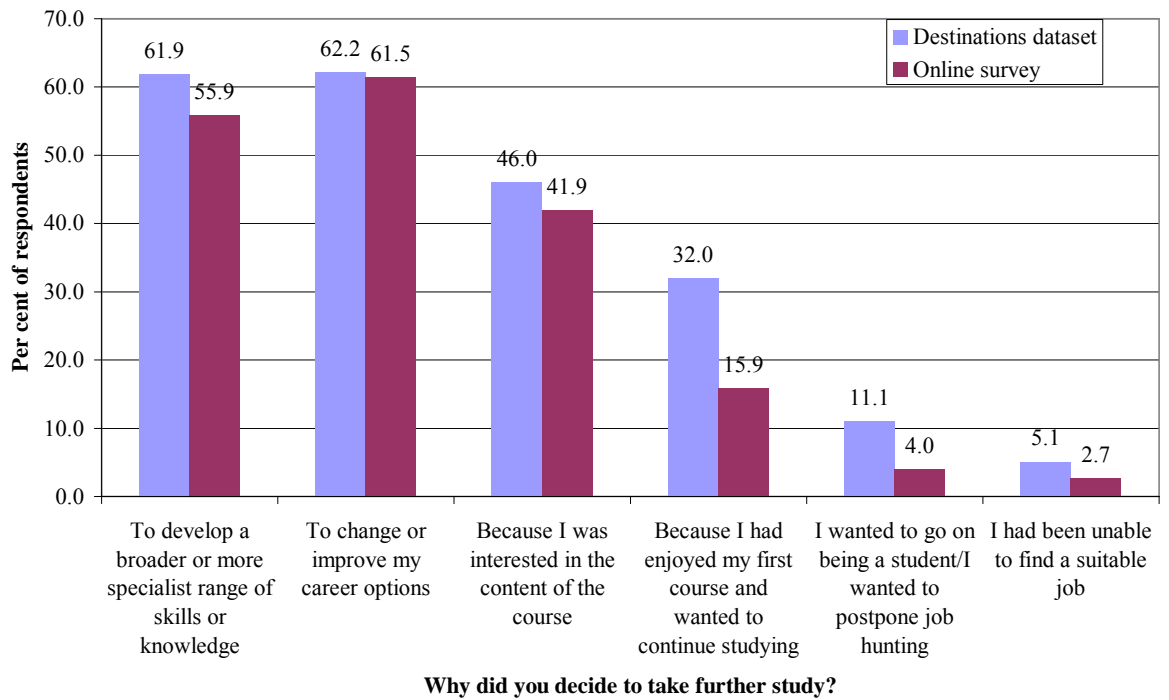
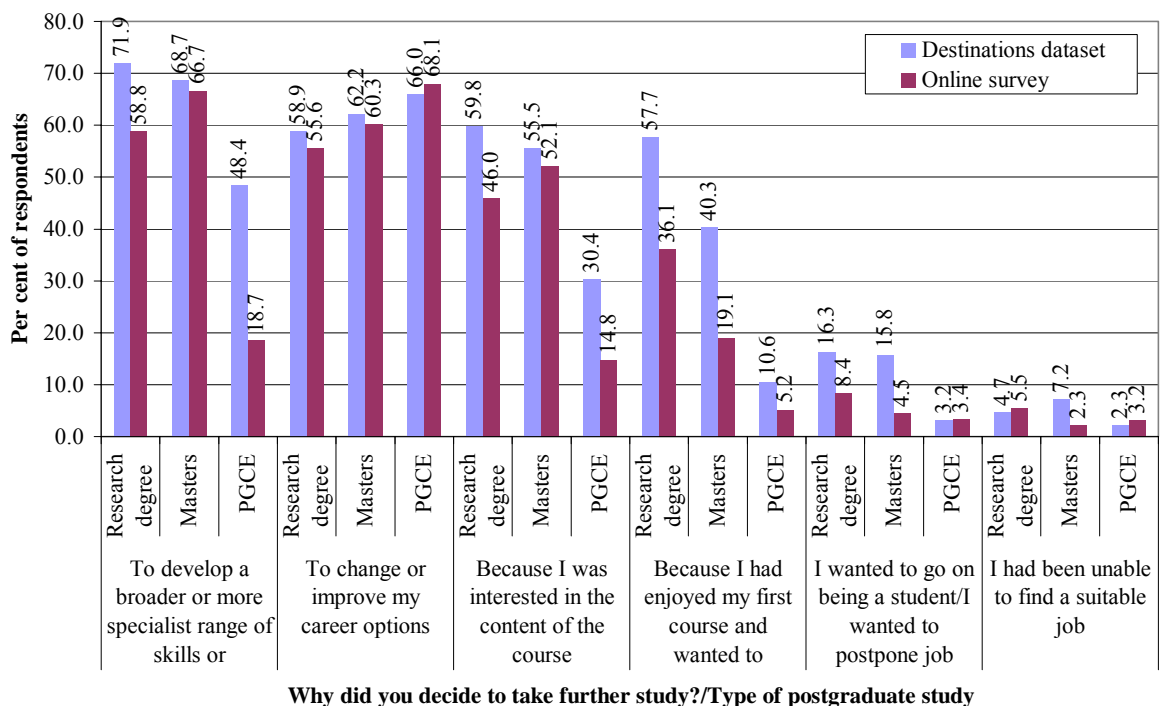


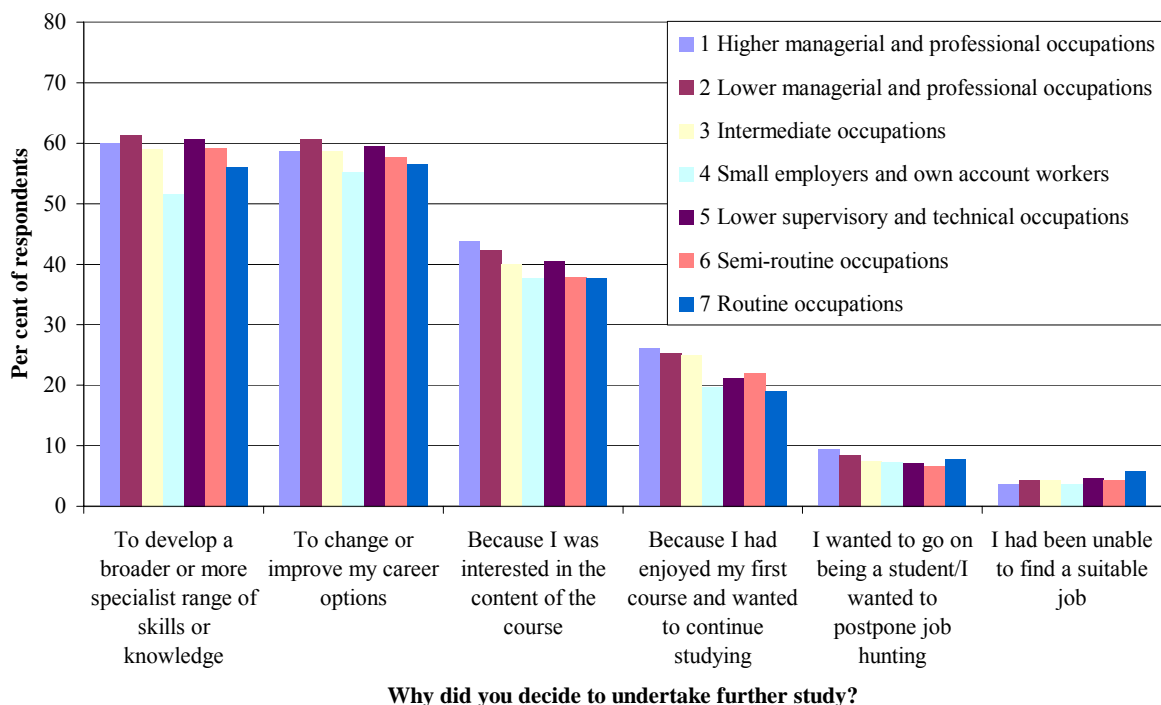
Figure 7.2: Comparison of reasons for entering postgraduate study for full-time UK-domiciled first-degree graduates entering postgraduate study 2002/03 – 2004/05 and respondents to the online survey by type of postgraduate study (where a response given)



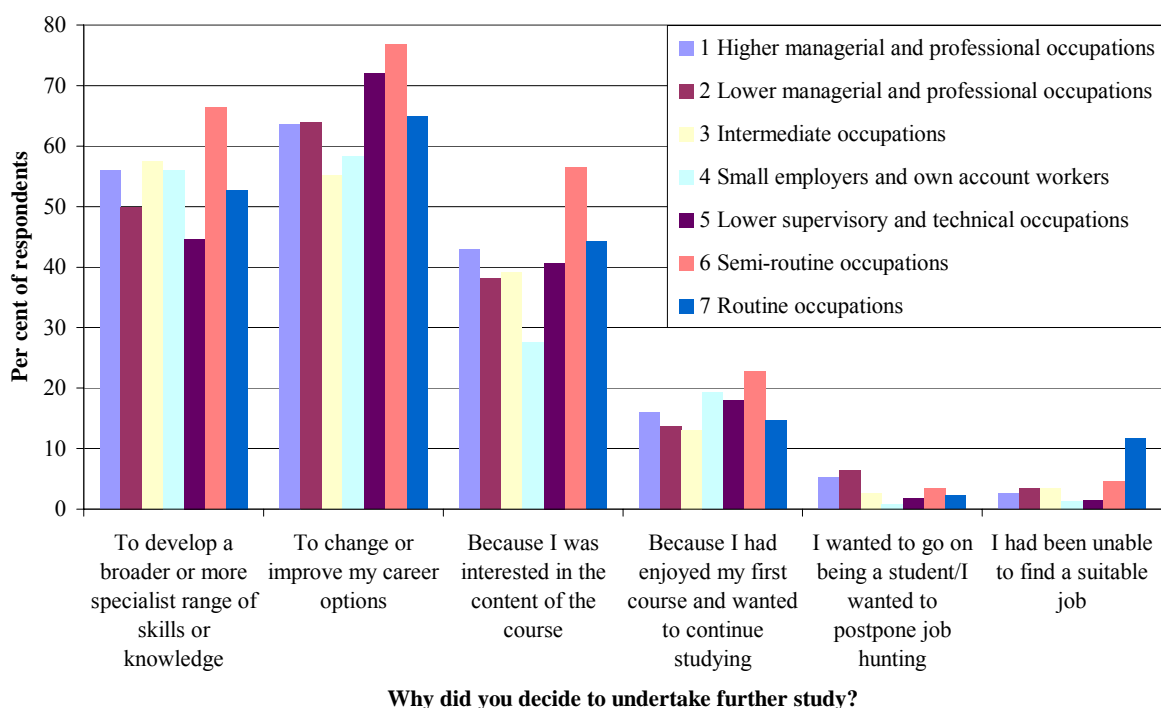
Sources: DLHE 2002/03 – 2004/05; online survey.

Figure 7.3: Comparison of reasons for entering postgraduate study by social class (where a response given)

(a) full-time UK-domiciled first-degree graduates entering postgraduate study 2002/03 – 2004/05



(b) current postgraduate students (as at summer 2007)



Sources: DLHE 2002/03 – 2004/05; HESA Student Record 2002/03 – 2004/05; online survey

instrumental reasons dominate: well over half of all respondents reported taking postgraduate study to improve their skills and improve their career options. Education for its own sake was a weaker motivation, particularly for current postgraduates, with course content and enjoyment of study less likely to be cited as motivations. The proportion of current postgraduates who wanted to continue studying having enjoyed their first course is substantially lower than that reported in the destinations dataset, although this may well be because relatively few of the former group will have recently completed their first degree. The two 'negative' reasons for entering postgraduate study, either through 'drift' or the prospect of under- or unemployment were selected by only a small proportion of respondents in both groups. These reasons were more likely to be cited by the first-degree graduates, with one in ten reporting wishing to postpone entry to the labour market.¹³⁰ Returning to postgraduate study after doing something else is much more likely to be a deliberate and positive decision. There could be an element of 'satisficing' in the response to the question too, with item response tailing off for the later reasons.

Figure 7.2 disaggregates the reported reasons for pursuing postgraduate study by the type of postgraduate study undertaken. One would expect that the motivations of those taking research degrees, masters and PGCEs might vary, both within and across the groups. PhD students for instance are committing to at least three years of in-depth study on a specialist topic, hence one would anticipate their being largely intrinsically rather than extrinsically motivated. Likewise those taking a PGCE are training for a particular career so their motivation is likely to be mainly instrumental. The course is a means to an end. This interpretation does not quite hold true however. Although research degree students are most likely to want to continue studying out of enjoyment of their first degree, this is a less popular motivation for them than developing their skills and knowledge. Masters students

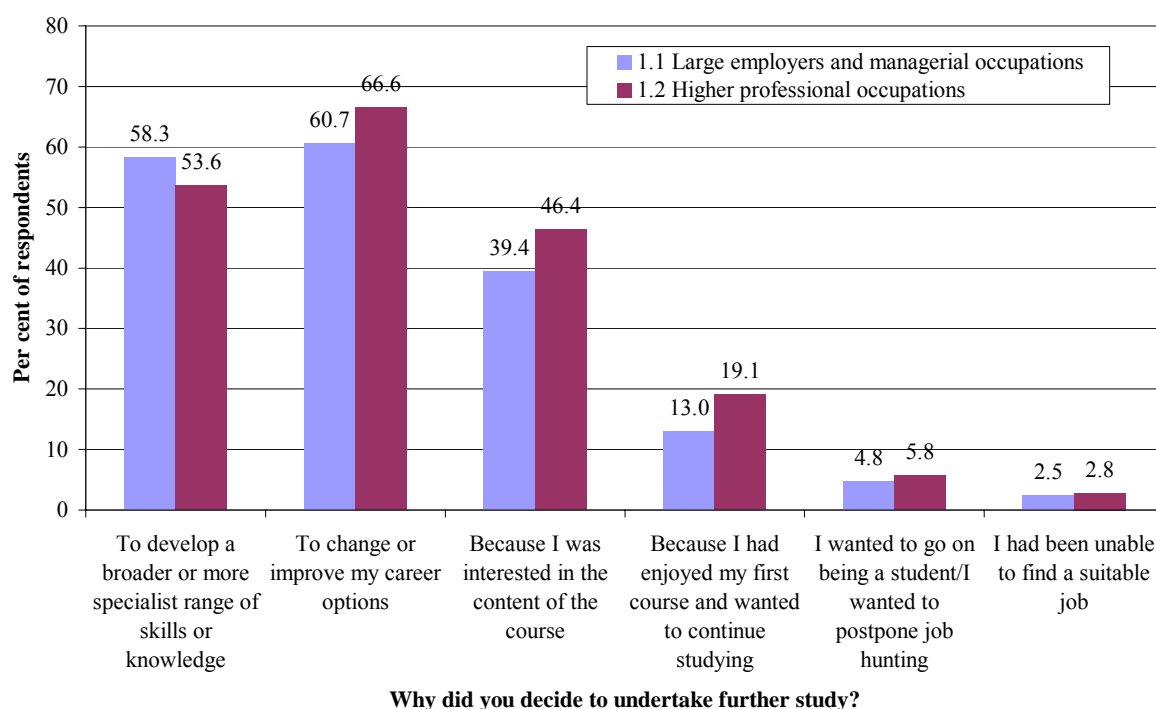
¹³⁰ I suspect that the survey may underestimate the proportion of first-degree graduates who 'drift' into postgraduate study. These students could be among those not responding to this question in the destinations dataset. For an anecdotal take on this, see Mickel (2005): "While some British students stay out of academic interest, many seem to choose an MA as a way to postpone entering the job market. Between the lie-ins and long sessions down the pub, it's perhaps little wonder that more people want to stay as students."

in the online survey were more likely to report interest in the course content as a motivation than research students in the same group. Most students, regardless of type of postgraduate study or dataset, wished to improve their career prospects; similarly very few of any description were undertaking postgraduate study having been unable to find a job. Figure 7.3 compares the reasons cited for entering postgraduate study for the destinations and online survey datasets. In the destinations dataset (Figure 7.3a), the differences between the social classes in citing each reason are small. There are some small social class differences which run in the direction predicted by the theories discussed above. For instance, Class 1/2 graduates are more likely to cite intrinsic interest in further study than Classes 6/7 and (marginally) to wish to carry on being a student. However Class 1/2 graduates are also more likely to cite instrumental reasons for continuing and less likely to enter postgraduate study having found an unsuitable job, running counter to predictions. There is evidently more disparity in the reasons for pursuing postgraduate study *within* each social class than between the classes.¹³¹

Class differences in motivations are more pronounced in the online survey dataset (Figure 7.3b). Again however, these are not necessarily in the direction predicted by theory. Respondents from Class 6 were more likely than Class 1 graduates to cite both instrumentalist *and* idealist reasons for continuing with further study. Class 7 graduates were the most likely to return to study having been unable to find a suitable job. Class 4 and 5 graduates were generally less likely than those of other classes to cite *any* of the reasons for pursuing postgraduate study.

¹³¹ Sex differences in the reasons cited for continuing to postgraduate study are also minor. The analysis in Figure 7.3 was repeated substituting social class with parental education levels. There was a very slight tendency for those with highly educated parents to cite intrinsic rather than extrinsic motivation for study.

Figure 7.4: Comparison of reasons for entering postgraduate study by current postgraduates for 'fractions' of Class 1 (where a response given)



Source: online survey

The much smaller sample size of the online survey may also have introduced an element of volatility which is not present in the larger destinations dataset. However there is one further finding of note in relation to this dataset. It was possible to code social class in such a way as to distinguish, within Class 1, between NS-SEC groups 1.1 and 1.2 ('Large employers and managerial occupations' and 'Higher professional occupations' respectively). This distinction is not available in the destinations dataset. Cultural capital theory, along with empirical work which has a loosely Bourdieusian influence (e.g. le Roux *et al*, 2008; Power *et al*, 2003; Savage, 2000; Savage *et al*, 1992), suggests that different fractions of the service-class have different class-reproduction strategies. Simplifying considerably, professionals are more likely to emphasise the acquisition of qualifications and the value of education (cultural capital), with managers stressing entrepreneurship, networking and experience (economic and social capital). One would thus expect some degree of instrumental/ideal split between these groups. Figure 7.4 gives

only very limited support to this proposition: Class 1.2 postgraduates were more likely to cite idealist reasons for taking their course, but were also more likely to be seeking to change or improve their career options. Class 1.1 postgraduates were more likely to be seeking to develop specialist skills, but not by any substantial margin. Once again, the greatest differences in response were within each class rather than between the two.

As was the case for the relationship between social class and progression to postgraduate study, one might suspect that the direct effect of social class on reported motivation for entering postgraduate study is mediated by one or more intervening variables, such as institution attended or gender. To investigate this possibility, a series of single-level logistic regression models was fitted to predict whether a graduate in the destinations dataset would cite a given reason for entering postgraduate study. The predictor variables were social class, degree classification obtained, gender and institution type. Separate models were fitted for those progressing to research degrees, taught higher degrees and PGCEs. The model results are not reported here because, with the exception of the odd parameter or two, the coefficients for social class did not significantly predict that a graduate would cite any of the reasons for continuing for any of the qualification types. Indeed in most cases, none of the predictor variables gave a significant result.

The analysis of motivations has shown few social class differences of note. There are differences across qualification in motivation and differences between those progressing to postgraduate study and those currently undertaking postgraduate study. Introducing social class as an intervening variable, however, appears to have neither a direct nor indirect effect of any importance. On the face of it, this is contrary to the predictions of RRA and cultural capital theories, both of which would forecast a more instrumental attitude towards postgraduate study for lower-class students. Although this *could* be taken as evidence that postgraduates are an increasingly homogenous group in terms of their values, abilities and dispositions regardless of their background

characteristics, it is difficult fully to support this conclusion without knowing about the motivations of those *not* progressing to postgraduate study. For the destinations dataset we can perhaps be more confident, since there is little ‘unexplained’ relationship between social class and progression to postgraduate study. At this stage, social class does not appear substantially to affect the propensity to enter postgraduate study, nor is there any great difference in motivation by social class between those who follow that route. There is a little stronger effect of class on motivations among existing postgraduate students. I have yet to present in detail data on the social class background of current postgraduate students; as the next section will show, the conclusion that there is no strong direct effect of social class appears to hold true only for immediate progression and not for later transitions.

The next section moves on to investigate more directly the social class differences between first-degree graduates and those currently in postgraduate study, as reported in the online survey. Whilst the destinations dataset gives fairly comprehensive coverage of the population of first-degree graduates, those progressing to postgraduate study from such cohorts represent a relatively small proportion of all postgraduates. It will become clear that the conclusions drawn about the insubstantial effect of social class in the immediate first-degree to postgraduate degree transition cannot be supported in relation to the postgraduate student body as a whole. That is, despite there being few notable differences in the reported motivations of postgraduates across the two datasets, when it comes to their social class background there is a marked divergence. The next section begins the exposition of these differences.

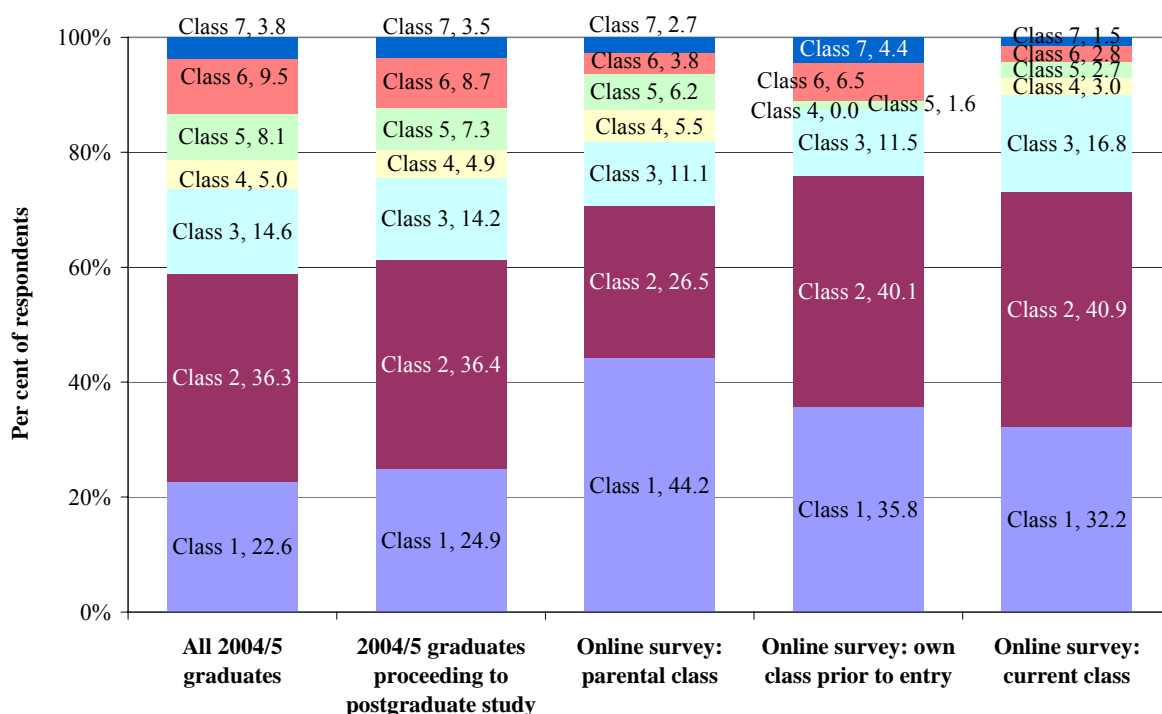
The social class background of current postgraduates

The purpose of undertaking primary data collection was to collect information about the social class background of current postgraduates, there being almost nothing known about

this subject. Information was collected about parental social class (both parents if applicable), the postgraduate's own social class based on their occupation prior to entering their current course and, if applicable, their current social class based on an occupation they were engaged in concurrent with postgraduate study. If a relationship is hypothesised between social class and entry to postgraduate study, then this could result from childhood (dis)advantage but also (and perhaps more meritocratically) through one's own social class as an adult. As postgraduate courses typically require a first-degree as a prerequisite for entry, there is something of an in-built social class bias if considering the effect of 'current' social class because graduates of a few years' standing are likely to be employed in a 'graduate job'.

Figure 7.5 appears to show that current postgraduates are more likely to come from a managerial or professional social class background than first-degree graduates, whether we measure the social class of the current postgraduates according to their parents' occupations or their own current or previous occupations (if they had one). There are particularly noticeable differences between levels in the proportion of students in Classes 1, 2 and 5. The ratio of the odds that a postgraduate as opposed to a graduate is from Class 1 is 2.7. On the face of it, a postgraduate is much more likely to be from Class 1 than a graduate, if the evidence from the online survey is to be believed. This seems to be at the 'expense' of Class 2 where representation is lower among postgraduates than among first-degree graduates. This impression is confirmed by using first-degree graduates progressing to postgraduate study as the comparator instead of all first-degree graduates, since the class gap is little altered (the Class 1 odds ratio drops from 2.7 to 2.4). These patterns are contrary to those observed for immediate progression to first-degree study: there appear to be larger social class differences between the postgraduate student population as a whole and a cohort of first-degree graduates. Thus the possibility is raised that later entry to postgraduate study is affected by social class background.

Figure 7.5: Comparison of social class background of UK-domiciled full-time first-degree graduates 2004/05 and current postgraduates (summer 2007), where social class known



Sources: DLHE 2004/05; HESA Student Record 2004/05; online survey

Such a proposition must be subjected to detailed scrutiny before it can be confirmed. There are a number of measurement problems which must be considered first of all. As noted in Chapters 4 and 5, the respondents to the online survey cannot be considered a random sample of all UK-domiciled postgraduates studying in British higher education institutions in 2007. Indeed the survey was not designed to achieve this, although weights were subsequently applied to the dataset to adjust for known population parameters. Hence the results for the online survey given in Figure 7.5 must be treated as indicative rather than definitive. Results for postgraduates' social class based on their own occupation are particularly vulnerable to error because there are more cases with data

missing or missing-by-design.¹³² There is no way of determining the margin of error for these results. Comparing the results only for institutions which took part in the survey is one way to reduce this likely source of error and this will be carried out in Chapter 8.

There is also a difficulty in ensuring a meaningful, as opposed to statistically accurate comparison. If investigating progression to postgraduate study of a single cohort, one has reasonable certainty that the comparison is meaningful; it is a comparison of like with like. In this case however, the comparison is between one group of first-degree graduates from a particular year (2004/05) and a more amorphous group of postgraduates measured at a later point (mid-2007), some of whom will have entered postgraduate study within the last year, but many of whom will have entered at an earlier point. About three-fifths of the online survey respondents had entered their current course in 2006 or later, but 15% had entered in 2002 or before. Likewise the online survey respondents will have completed their first degree at differing times: the range was 1956 – 2007, with one-fifth finishing before 1990 and three-fifths before 2002. The mean age of 2004/05 graduates in the destinations dataset was 23.5 years, with a standard deviation of 5.4 years; for the online survey postgraduates it was 35.8 years, with a standard deviation of 11.4 years.¹³³ This is important for two reasons: firstly the social class exclusivity of initial entry to higher education has decreased incrementally in absolute terms over time (Blackburn and Jarman, 1993; Halsey, 1993; National Audit Office, 2008). Thus older graduate cohorts are more likely to have comprised those from the higher social classes than more recent cohorts. If postgraduates are, as a group, substantially older than first-degree graduates, it follows that postgraduates should have a more exclusive social class background. Filtering

¹³² The (weighted) base *n*'s for Figure 7.5 for the online survey postgraduates are 1,917, 1,070 and 1,041 respectively.

¹³³ The mean age of postgraduates in the HESA postgraduate dataset for 2004/05 was 34.3 years, with a standard deviation of 10.2 years. Postgraduates will inevitably be older than undergraduates because postgraduate study is taken after undergraduate study. However if all postgraduates had begun their course immediately after their undergraduate study, the difference in mean ages should match the mean of postgraduates' course length (likely to be $\geq 1 \leq 3$). There was some variation by qualification aim: PGCE students were youngest on average (mean age 29.3 years), followed by research students (32.7 years), taught higher degree students (34.2 years) with those on other postgraduate qualifications the eldest (35.5 years).

the online survey respondents to select out recent first-degree graduates only is one strategy and is attempted in Chapter 8, although inevitably this reduces the base of observations on which the analysis is performed.

A related difficulty is the change in the British class structure which has occurred over the latter half of the twentieth century. The absolute size of the different social classes has shifted,¹³⁴ such that some difference in parental origins and filial destinations is guaranteed. The professions, managerial and clerical work have expanded whilst manual work, particularly skilled manual work, has contracted (Goldthorpe and Jackson, 2007; Goldthorpe and Mills, 2008). Moreover the entry of women into the labour force in increasing numbers from the end of World War II onwards has altered both the ‘individual’ occupational class structure itself and the ‘household’ class structure where dual-income families are common (Crompton, 2006, 2008). The parental social class of the average older person is therefore likely to be *lower* than the average younger person, a trend which might go some way to counteracting the greater social class exclusivity of access to higher education for older cohorts. Differential birth rates by social class further confuse matters as does the shift in the gender composition of the student body, with older cohorts having a male majority and more recent cohorts a female majority. For this reason it will be interesting to compare the paternal *and* maternal social class background of men and women postgraduates.

Despite my best efforts, it is possible that the difference in the social class profile between first-degree graduates and current postgraduates, as represented by the survey, is due to differences in measurement between the online survey and the collection of occupational background information by UCAS. At the point of undergraduate application, social class is derived at UCAS from the job title of the ‘head of household’. Previous research evidence suggests the tendency of data inputters is to err ‘downwards’ in coding

¹³⁴ These changes were part of the motivation for the replacement of the Registrar General’s Social Class schema with that used in this thesis, the National Statistics Socioeconomic Classification.

job titles, which may lead to an underestimate of the number of students from higher social classes (Rudd, 1987; Professor Colin Mellors, University of York, personal communication, 25 October 2004).¹³⁵ If this were the case, it is possible that there is little social class difference between first-degree and postgraduate levels, but that first-degree study is considerably more exclusive than current data suggests. An alternative explanation is that respondents, who self-coded into an occupational group in the online survey, exhibit an *upward* bias, such that they exaggerate their parents' status. These problems are apparently common in self-completion surveys (Dillman, 2007).¹³⁶ On the other hand, however, the questions used for deriving social class in the survey instrument closely followed those recommended by ONS for self-administered surveys and hence draw on the substantial pre-testing and validation resources invested in this area during the ONS project to revise the Government's 'official' socio-economic classification. Although it is anecdotal and impressionistic evidence, my experience of cleaning and coding the social class data entered by respondents (e.g. where they were unsure which occupational group to select and gave detailed information) was that parents predominantly *did* have service-class occupations.¹³⁷

¹³⁵ Professor Mellors recounted his findings on an (unpublished) research project which involved, among other things, checking the social class coding applied by UCCA (as it then was) to occupational titles entered on the application form by university applicants. Several examples were given where parental class appeared to be inaccurately coded too 'low'. The description 'engineer', for example, was generally coded as class IIIM Skilled Manual (on the old Registrar General schema) and only coded to class I Professional if prefixed by 'Chartered'. An extreme example was the son of a high-ranking civil servant who, despite having a parental address which indicated significant parental wealth, was classified, along with most civil servants, as IIIN Skilled Non-manual! In almost all cases, where there was any uncertainty, the default coding used tended towards a lower-ranking occupation and therefore social class categorisation. This evidence derives from practice approximately fifteen years old, so working practices could well have changed dramatically.

¹³⁶ One might suspect the opposite is true of research students or social scientists, where reports of humble origins are common (Devine, 2004) and where they are often taken as "a sign of virtue" (Fish, 1994, p. 278; see also Wakeling, forthcoming 2010).

¹³⁷ Two further possible artefactual explanations for the differences between the datasets were tested. Firstly, students who enter higher education aged 25 or over are conventionally allocated to a social class using their own occupation, not that of their parental household. Since the social class variable was based on 'natal' class (or rather parental household social class when the respondent was aged 15), students aged 25 or over in the destinations dataset might be distorting the model parameters. The full multinomial logistic regression model (Model B) was re-run for the subset of first-degree graduates aged 28 or under at the point of graduation (assuming a three year degree). There was no substantial change in the parameters for social class. Secondly, I analysed the social class background of those postgraduate students in the dataset who had completed an undergraduate degree in the previous year (i.e. those progressing immediately to postgraduate

To summarise, although some caution is needed in accepting the results on social class from the online survey, there is *prima facie* evidence that the current postgraduate population has a quite different social class background to both first-degree graduates as a whole *and* to those first-degree graduates who progress immediately to postgraduate study. This calls for further in-depth analysis, investigating whether these patterns in the online survey dataset are similar to those in the destinations dataset with respect to class (such as institutional and subject differences). Chapter 8 will present the results of this analysis.

Conclusion

This chapter set out to validate the conclusion of Chapter 6 that apparent social class effects in progression to postgraduate study are largely accounted for by academic and some other demographic factors. To take account of the range of potential pathways open to a new first-degree graduate, multinomial models were fitted which compared the effect of academic and socio-demographic factors across outcomes rather than as a binary choice between entering a particular kind of postgraduate study or not. These models supported the simpler analyses in Chapter 6. Gender proved to be a stronger predictor of (non)continuation to postgraduate study than social class, although students from non-professional backgrounds were more likely to enter a PGCE.

A further set of models was fitted to allow for the ‘clustering’ effect of institution. These showed that there was substantial variation in progression to postgraduate study across institutions, with variation greatest at research degree level. Adding fixed effects of subject of study and degree classification obtained reduced the institutional variance a little and generated results similar to the multinomial models. Adding socio-demographic fixed effects again showed progression to postgraduate study to vary by gender more strongly

study). This actually showed a further shift in social class exclusivity. However the number of cases on which this analysis is based ($n = 366$ unweighted) make it rather unwise to draw firm conclusions.

than by social class. Although there continued to be no social class effect in progression to a research degree holding the other variables constant, there was a small effect for both taught higher degrees and PGCEs.

The message from Chapter 6 and from the regression models fitted in this chapter is clear. For graduates in the same subject, who have achieved the same degree classification and attended the same institution, progression from a first-degree to postgraduate study varies little by social class background. For entry to a research degree there is no discernable social class difference; for a taught higher degree there is a very small difference, but one which is much smaller than for gender; for entry to a PGCE, a non-professional background seems to be a slight advantage, although that may speak volumes about the downward mobility of the teaching profession.¹³⁸ Any salient social class effect on progression to postgraduate study must be *indirect*, through social class differences in subject of study, degree classification obtained and, most plausibly, institution attended.

It could be said that a pattern of ‘weak’ meritocracy is displayed; that is statistical modelling suggests progression is based on the formal qualifications which a graduate possesses (a degree in x from y university with a grade of z). On the face of it then, these patterns do not seem particularly unfair. The situation appears similar to that identified by Chowdry *et al* (2008) in their comprehensive analysis of higher education initial participation by the cohort of English pupils in Year 11 in 2001/02, as reported in Chapter 3, where differential social class performance at A-level was the principal explanation for differences in initial HE participation. Whether one accepts this as ‘strong’ meritocracy requires a different level of proof. It would be necessary to demonstrate a close correlation between ability (and effort) and attainment independent of social class. With the datasets available it is not possible to form a judgement on this. Whilst some would argue that differences in participation are entirely due to social class differences in intelligence (e.g.

¹³⁸ Schoolteaching was demoted from Class I in the Registrar General scheme to NS-SEC Class 2, a move which caused some discussion in the media (e.g. Woodward, 2001).

Nettle, 2003; Charlton, 2008), there is also evidence to the contrary. Feinstein (2003; and Bynner, 2004) has suggested that children from disadvantaged backgrounds fare less well than their more privileged peers as their educational career progresses, holding early-childhood cognitive ability constant. Analyses of attainment at degree level have shown that pupils from state schools achieve a better degree classification than privately-educated pupils with the same A-level grades on entry (HEFCE, 2003; Smith and Naylor, 2005), suggesting that whilst A-levels are a good predictor of degree-level *attainment* (Bekhradnia and Thompson, 2002; Smith and Naylor, 2001, 2005), they are not a reliable indicator of *ability*.

Aside from differences in attainment, there is also the question of ‘tracking’, or what is often referred to as ‘horizontal’ stratification. That is, different kinds of higher education institution and fields of study do not have identical demographic profiles and do not exhibit identical outcomes. As shown in Chapter 5, there *are* social class differences in progression to postgraduate study; what Chapters 6 and 7 show is that this is accounted for by class differences in what is studied and where at first-degree level. Thus the influence of social class may work through differences in prestige between institutions and fields of study. In other words, the opportunity to progress immediately to postgraduate study is ‘set’ on entry to a first degree. We are back to Turner’s sponsored mobility concept: there is a potential homology between grammar school education and attendance at a Russell Group university. The working-class were/are underrepresented in these institutions, but those who did/do obtain entry suffer no further disadvantage of note. There is an appearance of meritocracy, which conceals institutionalised differences on the basis of social class. Inequality is being, in Lucas’ terms, ‘effectively maintained’.

Attention then shifted to the reported motivations of the postgraduates, to determine whether these varied by social class. It was noted that the two main competing theories in the sociology of educational inequality, cultural capital and rational action theories, would

both forecast an instrumental motivation for working-class postgraduates and a more idealist inclination for those from the service class. The data did not support this hypothesis however. Postgraduates' motivations were similar across both datasets and social class differences were small and not always in the expected direction. This was a surprising and somewhat unexpected finding which gives a tentative indication that *neither* theory provides a wholly adequate explanation of the processes governing entry to postgraduate study.

Although similar motivations were reported by the postgraduates, the overall social class profiles of the two datasets were quite distinct, with a much higher proportion of current postgraduates in the online survey being from a Class 1 background than was seen either among first-degree graduates as a whole for 2004/05 or for those among them who progressed to postgraduate study. Indeed the odds that a postgraduate as opposed to a first-degree graduate was from Class 1 was 2.7 to 1. The online survey dataset therefore gives the impression that there are substantial social class differences in entry to postgraduate study taken as a whole, a quite different picture than that given by the destinations dataset.

This blunt comparison of datasets is problematic however. I have discussed possible measurement differences between the datasets in this chapter, concluding that, despite recognised limitations in both datasets, the difference in social class profiles between them are unlikely to be wholly attributable to artefactual effects. To establish a meaningful decline in representation among Classes 2 to 7 among current postgraduates, a more complex dissection of the online survey data is required looking across the intervening factors used in this and the previous chapter. There are also several interesting variables collected in the online survey, not available in the destinations dataset, which could reveal more about the socioeconomic background of postgraduate students. Chapter 8 takes up this analysis.

8 The social class background of current postgraduates: evidence from the online survey

Introduction

Chapters 6 and 7 focussed principally on the relationship between social class and progression to postgraduate study as a ‘first destination’. As has been repeatedly demonstrated, immediate progression from a first-degree to postgraduate study represents only a small part of total postgraduate education. Most postgraduates begin their study after at least a year out of higher education (and of course some do more than one postgraduate course). The online survey detailed in Chapter 4 was designed to collect data about the socio-economic background of current postgraduate students, data which is not readily available elsewhere. It therefore represents a unique resource for exploring the socio-economic background of all postgraduate students, not simply those who have progressed immediately to postgraduate study from a first degree. A cursory analysis of this data at the end of the last chapter suggested there is considerable difference between the social class background of first-degree graduates progressing to postgraduate study and those currently in postgraduate study. Several possible reasons for this difference were discussed. However it is clear that further detailed analysis is required to confirm the difference and to explore what other academic and socio-demographic factors are associated with the shift in social class composition. This chapter reports the results of this analysis.

I will investigate those factors which were seen to structure the demographic patterns among first-degree graduates such as subject of study, institution attended, degree classification obtained and the type of postgraduate qualification towards which a student is aiming. For immediate progression to postgraduate study, controlling these variables minimised the already quite small effect of social class on progression. Whether this

remains the case among current postgraduates is an interesting empirical question with important theoretical implications too. The online survey permitted the collection of additional socio-demographic data to complement and extend that available in the destinations dataset. Thus there is data on social class background (paternal, maternal and student's own as an independent adult), type of school attended and level of parental education, the latter being an exceptionally strong predictor of educational progress at all levels (Bourdieu and Passeron, 1979; Burnhill *et al.*, 1990; Ianelli, 2002; Rudd, 1987). This additional data will enhance the understanding of the socio-economic characteristics associated with postgraduate students.

The online survey data also includes details of current postgraduates' activities prior to entering their current course. There is an apparent difference in social class profile between first-degree graduates who proceed to postgraduate study and current postgraduates. However where the first degree to postgraduate transition is not contiguous there is a knowledge gap: it is not known what graduates who enter postgraduate study two or more years hence have done in the meantime. It could be that understanding what postgraduates have been doing in the interregnum will help to explain why there is a difference in socio-economic characteristics. The online survey dataset records whether postgraduates were working, unemployed, studying etc. prior to entering their current course and whether they still work. Thus I will investigate whether postgraduate study is used as an 'escape route' from unemployment or underemployment by those from certain backgrounds or rather whether postgraduates have typically already attained a certain occupational level on entering postgraduate study. It may be that both patterns are observable, but tied to different circumstances, subject of first degree and so on.

The online survey enables an examination of the link between financial and socio-economic factors. In addition to information on liability for first-degree tuition fees (a rough proxy for parental income), the survey collected data on postgraduates' level of

undergraduate student debt and their funding source for their current course (both tuition fees and maintenance). I will attempt to construct a picture of the financial situation of the postgraduate respondents and to compare this to their social class background and to what is known about undergraduate students' financial position.

Finally, the online survey dataset provides a more complete description of postgraduates' educational history than is available from the destinations dataset. In addition to a postgraduate's current institution, their previous institution(s) are listed together with their qualifications on initial entry to undergraduate study and any prior postgraduate qualifications. It is also possible to investigate changes in subject of study between levels and whether the mode of study (full-time or part-time) differs according to social background.

Clearly, what the online survey loses to the destinations dataset in breadth, it more than gains in depth. As the analysis which follows will show, it provides a more rounded picture of social class, which shows a strong link between parental education levels and entry to postgraduate study, the importance of mother's social class background and which gives some evidence on the relative importance of financial and cultural factors. The breadth of data also extends to academic factors, showing first-degree institution to be important but subject of study less so. Analysing this range of data permits an application and empirical testing of RRA and cultural capital theories; as with the analysis of postgraduates' motivations in Chapter 7, neither offers a particularly convincing explanation of the patterns observed. The detailed investigation of the online survey dataset supports and extends the initial finding at the end of Chapter 7 that, on average, the current postgraduates are from a more exclusive socioeconomic background than first-degree graduates who proceed to postgraduate study. With the data available in this study it is not possible to determine definitively why this discrepancy exists. However I will suggest that potential explanations may lie in the 'institutional pathways' argument

developed in Chapter 7; and in the value placed on postgraduate education at different points in the lifecourse. I will propose, in the concluding chapter, a means for addressing the discrepancy through further empirical research.

The social class background of current postgraduates: further analysis

We begin where Chapter 7 ended, with a closer investigation of the social class gap between first-degree graduates and current postgraduates. Chapters 6 and 7 showed distinct patterns of progression to research degrees, taught higher degrees and PGCEs (by social class and other factors). A starting point is therefore to establish whether this remains the case for current postgraduates or if instead we might believe the apparent social class gap between the datasets to be partly an artefactual effect of a differing mix of types of postgraduate.

Figure 8.1 presents a comparison of the social class profile of first-degree graduates from 2004/05 progressing to different kinds of postgraduate qualification and the current postgraduates taking the same qualifications.¹³⁹ Controlling for qualification type does not remove the social class gap. For all qualifications there is a substantial increase in the proportion of postgraduates from Class 1 backgrounds, with the largest differences being for research degrees and for ‘other’ postgraduate qualifications. The PGCE shows the smallest change in composition, but the shift here is still remarkable because immediate progression from a first-degree displays a clear inversion of the pattern for other qualifications, with a decline in the likelihood of Class 1 graduates taking the qualification. Interestingly it is only for the PGCE that the proportion of Class 2 graduates remains stable; for the other qualifications, there is some displacement of Class 2 by Class 1. Whereas Class 2 is the modal class among first-degree graduates (and the working-age UK

¹³⁹ Social class is based on parental social class for the current postgraduates, using the highest of maternal and paternal social class. Unless otherwise specified, this is the default for all such statistics presented in this chapter.

population, source: National Statistics 2004, Table 3.6, p.43), Class 1 is modal among the current postgraduates, regardless of qualification. There is little difference in the proportion of current postgraduates from Class 1 across research degrees, taught higher degrees and ‘other’ postgraduate qualifications, which appear more or less equally exclusive. The Class 6 and 7 comparison is also interesting. Of course, numbers are small for these classes in the online survey dataset – were this based on a random sample confidence intervals would be quite large. However the patterns are consistent across the qualification types, with the proportion of students from Class 7 remaining fairly similar and the proportion of Class 6 graduates declining dramatically.

A further possible artefactual effect is at the institutional level. Whilst the first-degree graduate dataset covers all institutions, the online survey dataset includes only nine.¹⁴⁰ As presented in Figure 8.1, the data from the online survey have been weighted based on known population parameters (as described in Chapter 5). This requires the acceptance of assumptions which might be considered tenuous by some. Weighting responses to give institutional totals (also described in Chapter 5) is a safer option perhaps and this has been done in all instances where institution totals are reported from the online survey (where institution totals are not reported, population weights are used). Comparing the proportion of first-degree graduates and postgraduates from Class 1 only for those institutions which took part in the online survey also confirms the social class gap (Figure 8.2). In fact the gap appears starker when seen in this way. For each institution, the proportion of students from Class 1 increases between first-degree graduate and postgraduate levels. The size of the change ranges from 7.6 percentage points to a huge 29.8, but in most cases it is substantial. Figure 8.2 also displays the subset of online survey respondents who completed their first-degree in 2004 or later to give an approximation to the first-degree graduate population. Surprisingly this actually *increases* the proportion of

¹⁴⁰ Recall that the results for Waterworth College are excluded because of the very low response rate, hence only eight institutions’ results are given.

Figure 8.1: Social class profile of UK-domiciled full-time first degree graduates 2004/05 progressing to postgraduate study and current postgraduates (summer 2007), by type of qualification

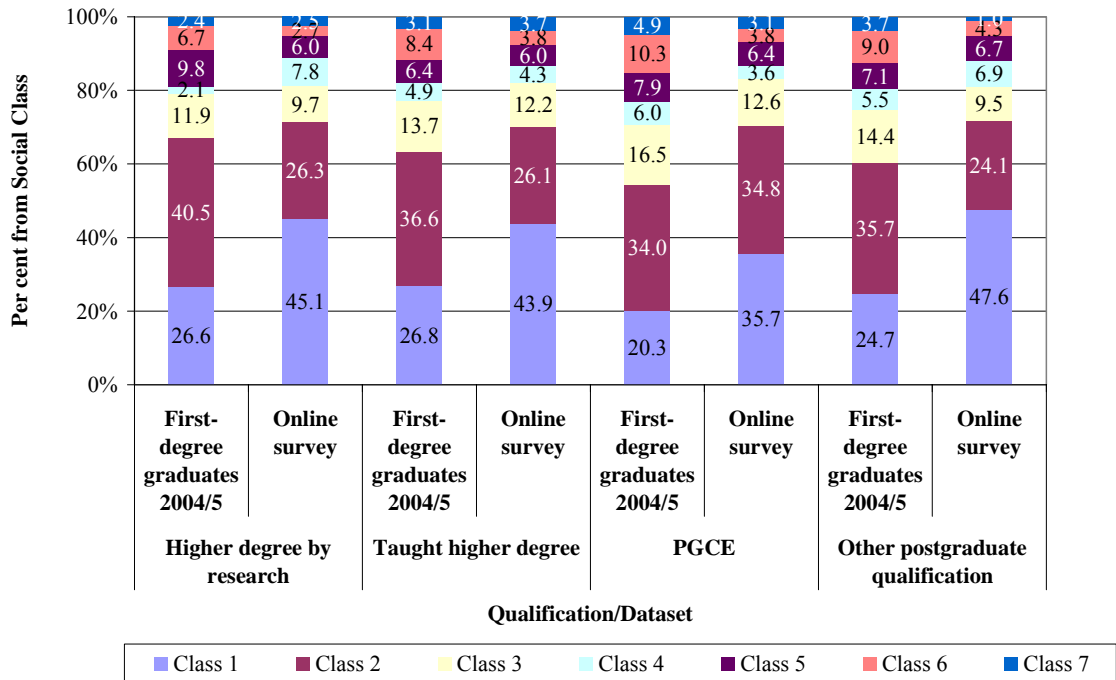
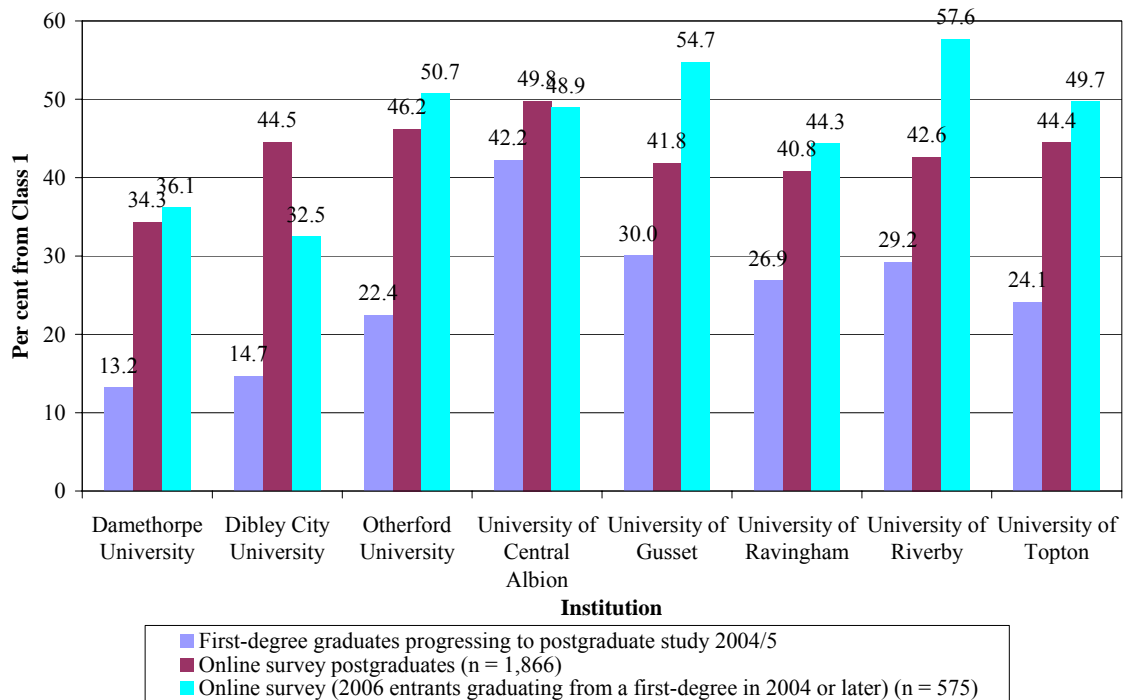


Figure 8.2: Proportion of students from Class 1 by dataset and institution



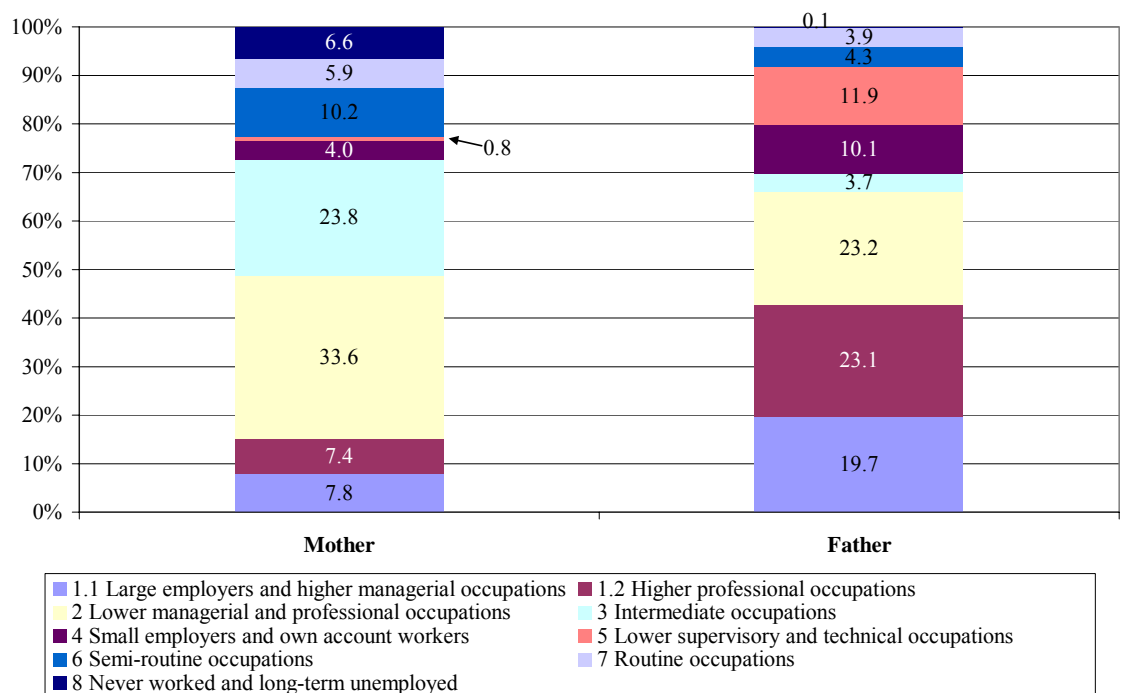
Sources: DLHE 2004/05; HESA Student Record 2004/05; online survey

postgraduates from Class 1 in six of the eight cases, suggesting that the shift in social class composition is not an artefact of an older postgraduate cohort. Another intriguing pattern evident from Figure 8.2 is the relative shift in the proportion of Class 1 postgraduates by the *type* of institution. The shift is largest at three ‘new’ universities (Dibley City, Riverby and Damethorpe) and smallest at three ‘old’ universities (Ravingham, Gusset and, particularly, Central Albion). There is a smaller range for the proportion from Class 1 at postgraduate as opposed to first-degree graduate level (34.3% to 49.8% and 13.2% to 42.2% respectively), with the rank order shifting somewhat. Central Albion is the most exclusive at both first-degree and postgraduate levels, but Dibley City jumps from being the second least exclusive at first-degree level to the third most exclusive at postgraduate level. Similarly, Gusset, which is the second most exclusive at first-degree level, drops to sixth at postgraduate level. On the face of it, there is homogeneity in the postgraduate social class profiles of institutions: inter-institutional variance seems remarkably low. This contrasts strongly with the position at first-degree level, where institution attended was shown to have a very strong association with progression to postgraduate study, accounting for much of any apparent ‘direct’ effect of social class.

Why might this be the case? The evidence in Figure 8.1 suggests that it is not simply due to the quite different balances of research and taught postgraduates in the institutions because the social class profiles of higher degrees are very similar. One possibility is that the institution attended for the postgraduate qualification is less of a signifier than at first-degree level. There is theoretical and empirical support for such a contention if taking the expansion of undergraduate study as a case in point. Although there has always been a degree of hierarchy in the British university system (Halsey, 1992), this was arguably less pronounced when participation rates were lower. If graduates are only a small fraction of the population, there is little need to distinguish between them. As graduate status becomes more common, its absolute value diminishes and gradations

become more important whether relating to the classification of degree a graduate holds or the institution by which a degree was awarded. The importance of such hierarchies grows the more participation expands (Collins, 1979; Shavit and Blossfeld, 1993; Shavit *et al*, 2007; Wolf, 2002) – this is the ‘effectively maintained inequality’ hypothesis (Lucas, 2001). It could be argued that postgraduate qualifications are still relatively rare - in the Labour Force Survey for 2nd Quarter, 2007 (data for which was collected at the same time as my survey), less than 3% of the population held a higher degree (12.5% held a first degree) – and hence institutional status distinctions are currently less prominent.

Figure 8.3: Social class of postgraduates’ mother/female guardian and father/male guardian, where known (n = 1,558 for mothers; n = 1,701 for fathers)



Source: online survey

The broader range of variables available in the online survey dataset allows a more detailed investigation of the social class background of the postgraduates. Whereas for first-degree graduates only a household social class indicator was available, here it is

possible to look at the paternal and maternal class backgrounds of postgraduates and their own social class as independent adults. Figure 8.3 shows that the occupations of the postgraduates' fathers/male guardians are more skewed towards Class 1 than the mothers/female guardians. Class 2 is the modal class for mothers but not for fathers, where Class 1 is modal and Class 1.2 is as common as Class 2. Mothers are also more likely to be in Class 3, 6, 7 occupations whereas there are more fathers than mothers in Classes 4 and 5. There are almost no fathers in Class 8, but more than one in twenty of the mothers fall into this category. They are/were presumably full-time mothers (a number of respondents volunteered this information unprompted). On the possibly unwarranted assumption that postgraduates' mothers and fathers remain in the same household, mothers in Class 8 are more likely than average to have a Class 1 partner.

Table 8.1: Social class of postgraduates' mother/female guardian and father/male guardian, where known (cells report per cent of all cases represented by each combination)

Mother/Female guardian's Social Class	Father's/Male guardian's Social Class								
	1.1	1.2	2	3	4	5	6	7	8
1.1	4.2	1.2	1.3	0.1	0.4	0.4	0.6	0.0	0.0
1.2	1.3	4.5	0.6	0.0	0.7	0.1	0.0	0.0	0.0
2	7.8	8.4	13.0	0.7	1.7	1.8	0.4	0.5	0.0
3	3.3	4.8	5.9	1.9	3.0	3.7	1.2	0.7	0.0
4	1.0	0.8	0.7	0.5	0.8	0.4	0.0	0.1	0.1
5	0.1	0.0	0.0	0.0	0.1	0.5	0.0	0.1	0.0
6	1.0	0.4	2.3	1.0	1.5	1.6	1.8	1.0	0.0
7	0.3	0.6	0.8	0.1	0.6	1.8	0.4	1.2	0.0
8	1.4	1.5	0.4	0.1	0.4	0.6	0.1	0.2	0.0

Source: online survey

To a large extent, these patterns reflect what is already known about the occupational patterns of men and women (Crompton, 2008). It is also well-established that romantic partnerships are typically homogamous in social class terms (Bottero, 2005). Table 8.1 cross-classifies the paternal and maternal social class of the postgraduates, with a

view to understanding the social class composition of the family from which postgraduates originated. Of course this means making a number of somewhat tenuous assumptions about the relationship between fathers and mothers across a child's life, ignoring single parent families and so on. It also pools postgraduates of all ages, which may generate its own artefactual effects due to the rise in women's employment over time and other changes (younger mothers are thus more likely to be in employment and in professional employment too). The table is shaded to aid interpretation – the darker the shading of a cell, the greater the number of cases which fall into that combination of mother's and father's social class. It is evident that most postgraduates are from a family background where both parents are employed in a managerial/professional occupation or where the father is a manager or professional and the mother is in an intermediate occupation. These combinations, in the top left-hand quarter of the table, represent 56.1% of the postgraduates. The diagonal in the table is not the darkest shaded area, reflecting the concentration of postgraduates in dual-professional families. Some of the darker-shaded areas incorporate known cross-class marriage concentrations (e.g. father Class 5, mother Class 3).¹⁴¹ However it also appears that postgraduates are more likely to be from households where the mother is in Class 2 or 3 and the father in Classes 3 – 8 than where the *father* is in Class 2 or 3 and the mother in Classes 3 – 8. In other words, outside the dual-professional households, mother's social class may be more strongly associated with filial entry to postgraduate study than father's social class.¹⁴² There do not seem to be any differences of note between male and female postgraduates in the social class of their mothers and fathers.

¹⁴¹ In sociological terms this combination of skilled blue-collar men and women in routine white-collar work should perhaps not be considered 'cross-class' even though that appears technically to be the case when using the NS-SEC or similar schemas. Qualitative research shows that class practices are similar across these occupations and that such households should be considered homogamous in socio-cultural terms (Devine, 1992).

¹⁴² Rothon's (2008) research on the utility of different methods of classifying households for the purpose of predicting educational attainment showed that a scheme which derived social class from a *combination* of mother's and father's occupation gave the best statistical fit in regression models. It very slightly outperformed a scheme which derived social class from the household member with the 'highest' occupation (as used here). Both were substantial improvements on a model using male/father's social class.

This section has shown that the overall difference in social class profiles between the destinations and online survey datasets is not explained away if controlling for type of postgraduate qualification studied or postgraduate institution. In fact unlike with immediate progression to postgraduate study, even PGCEs showed a distinctly more ‘exclusive’ social class profile. Comparing institutions, there was a shift to the service-class in the postgraduate student profiles of all the participating institutions, but this was more marked for particular universities and colleges. There appeared to be less variation in social class profile at postgraduate level than among first-degree graduates, suggesting that institutional stratification has yet to take a strong hold, probably because of the comparative rarity of postgraduate qualifications in the population as a whole. Finally the richer detail about social class background obtained in the online survey allowed an investigation of mother’s and father’s social class in a manner not possible with the destinations dataset. This showed that postgraduates were mainly from dual service-class households or those with a service-class father and an intermediate-class mother. However outside of dual service-class families, it appears that mother’s social class has a stronger influence on entry to postgraduate study.

The richer background data available from the online survey will now be investigated further, specifically by using parental *education*, instead of parental *occupation* as a measure of background advantage.

Level of education of postgraduate students’ parents

The link between parental and filial education is well-established and, in most research, stronger than that between parental social class and filial educational attainment; indeed those from lower occupational class backgrounds entering university are often found to have highly-qualified parents (Bourdieu and Passeron, 1979; Burnhill *et al.*, 1990; Rudd,

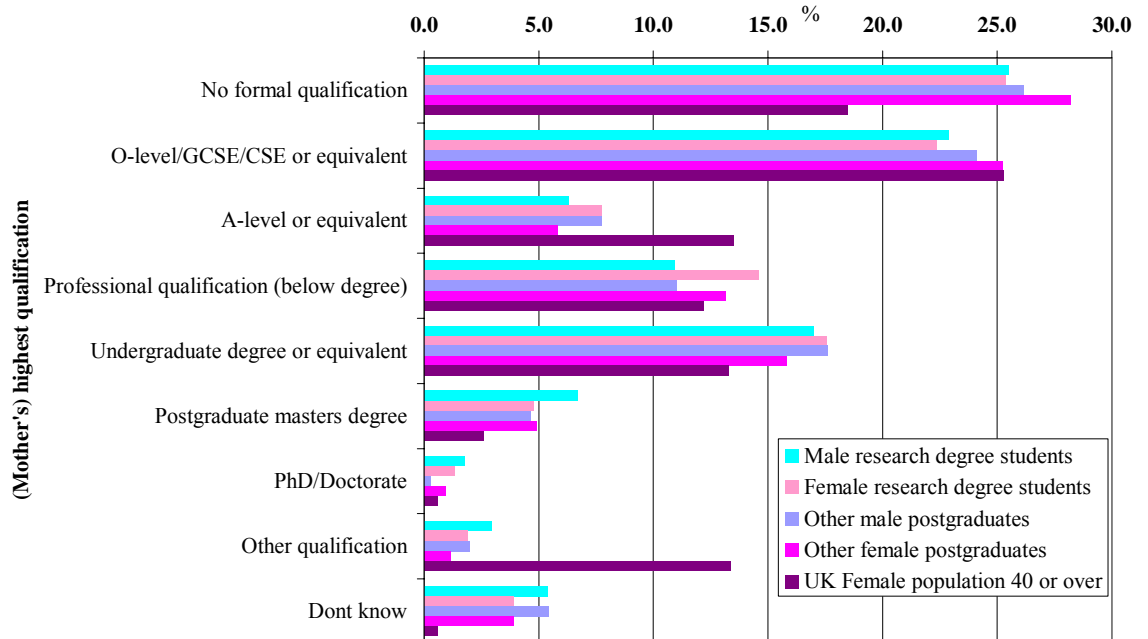
1987) and there is some indication that postgraduate parents beget postgraduate children (Mullen *et al*, 2003; Stuart *et al*, 2008; van de Werfhorst and Andersen, 2005). The debate over whether this is due to genetic inheritance or cultural inheritance is probably as old as the sociology of education itself. However there is certainly a significant tradition of sociological theory which identifies educational credentials as signifiers of ‘cultural capital’ and hence a kind of proxy for social class.¹⁴³ As described in Chapter 3, this sees the education system as a resource for social reproduction which is loaded in favour of the traits and dispositions of dominant-class habitus. This route of reproduction is favoured by certain sections of the dominant classes though (Bourdieu, 1996; Savage *et al*, 1992; Zweigenhaft, 1993), which we might broadly characterise as the intelligentsia, Gouldner’s (1979) new class, or more broadly still, NS-SEC Class 1.2. One would thus expect postgraduates to be the children of highly-educated parents, since they will inherit educational advantage (be this genetic or cultural) *and* an appreciation of the value of education. Indeed, Siegfried and Getz (2005) showed that the children of US faculty were more likely to attend research universities and liberal arts colleges than children of families of similar socio-economic status.

Figure 8.4 shows the highest qualification obtained by the parents of the postgraduates. The proportion of postgraduates’ parents who have no formal qualification is substantially greater than the proportion of the British population who are not formally qualified. However this may be measurement error since the figures for Great Britain are typically based on self-reporting (from the Labour Force Survey), whereas the data in the online survey dataset was proxy-reported (children reporting on parents, rather than parents reporting on themselves). Proxy reporting is known to generate measurement error (Dillman, 2007). It is quite possible that many postgraduate parents who were reported as having no formal qualification should have been classified as holding an

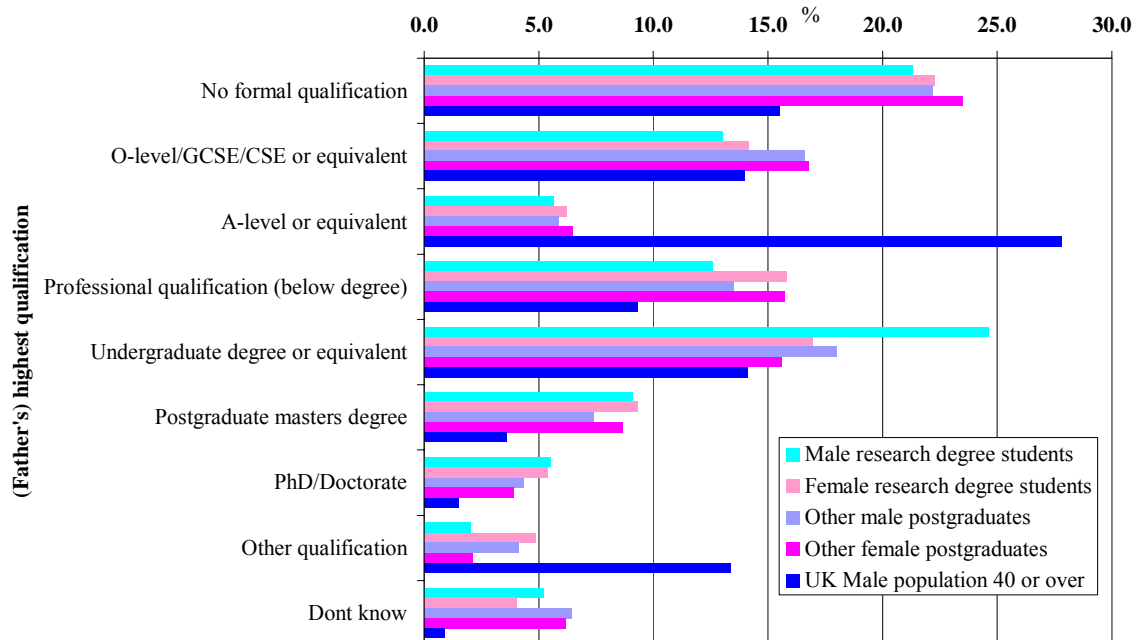
¹⁴³ See the discussions in Chapters 3 and 4.

Figure 8.4: Highest qualification of postgraduates' parents by type of course

(a) Mother's highest qualification



(b) Father's highest qualification



Source: online survey; Quarterly Labour Force Survey April – June 2007

‘other’ qualification, which would account for the large difference on this item between the postgraduates and the British population.

On the whole, the parents of postgraduates would appear to be more highly qualified than the comparable general population, particularly fathers. Postgraduates’ mothers are more likely to have an undergraduate degree and substantially more likely to have a masters degree than women in the general population. Research degree students’ mothers are more likely to have a PhD than women in general, particularly male research degree students. Interestingly, postgraduates’ parents (both mothers and fathers) are much less likely to have A-levels or equivalent as their highest qualification than the general population. Similarly postgraduates’ fathers are more likely to have a professional qualification, undergraduate degree, masters degree or PhD than men in general. The fathers of male research degree students are particularly highly-qualified, but other than that there are few substantive differences between male and female postgraduates or between research degree students and other postgraduates.¹⁴⁴

This finding confirms that of Stuart *et al* (2008) who reported that ‘first-generation’ higher education entrants were less likely to enter postgraduate study after a first-degree, controlling for a range of academic and socio-economic factors. It accords with the earlier findings on the social class background of current postgraduates. However whilst on the face of it, the higher-than-average qualification levels seen among postgraduates’ parents lends support to cultural capital theories and a pattern of socio-cultural reproduction through the education system, some caution must be exercised. There is little recent evidence about the educational qualifications held by the parents of first-degree students (as opposed to the general population). Rudd’s (1987) investigation of this is now over 20 years old, taking place prior to the wholesale change and growth to which UK higher

¹⁴⁴ Analysis of the educational qualifications of the postgraduate parents by social class background gave results as expected: those who had parents with a first degree or higher were almost entirely from the top three social classes. The reverse was not true, of course: a Class 1 background did not necessarily equate with highly-qualified parents.

education has since been subject. Thomas and Quinn's (2007) recent study of first-generation entry showed a positive association between high parental education levels and initial entry to higher education in several countries, including Canada and Croatia. They did not present estimates of the proportion of British undergraduates whose parents also held degrees, principally because suitable data was not available.¹⁴⁵

Investigation of the parental education of current postgraduates has provided evidence on postgraduates' family background of a kind not available since Rudd's (1975) study of a generation ago. It shows quite clearly that postgraduates' parents are typically qualified to a high level, with substantial overrepresentation of graduates and postgraduates amongst them. This analysis very much accords with the parental social class distribution seen for the current postgraduates. It is a demonstration of the distinctiveness of the online survey dataset which includes a range of additional variables for better understanding the socio-demographic characteristics of postgraduate students. As well as data about their parents and family background, questions about the postgraduates' own occupational and financial positions were included in the survey. The next section explores the potential influence of these factors on the postgraduates' participation in further study.

The students' socioeconomic position before and during postgraduate study

Since immediate progression from a first-degree to postgraduate study does not seem to be affected by social class background but later entry does, it is worth considering the activities of current postgraduates prior to and during their current course and their social class position as independent adults. Could it be that those taking postgraduate qualifications mid-career are building on positions of advantage in the labour market? Or

¹⁴⁵ Information on parental education has been collected via HESA for UK-domiciled entrants to English and Scottish higher education institutions only since 1 August 2007, hence information about the parental education of British graduates will not be available until 2010 at the earliest. The information will be collected via UCAS for 2008/09, with Welsh and Northern Irish institutions also taking part (source: HESA, 2008c).

alternatively, could underemployed graduates from middle-class backgrounds be using postgraduate study as a means of boosting their employment chances in a way not open to working-class graduates? It would also be instructive to investigate whether postgraduates from working-class backgrounds are more likely than middle-class postgraduates to be engaged in employment whilst in full-time study.

Conceiving of a postgraduates' own social class is somewhat tricky. As postgraduates are such a heterogeneous group, some will be older, long-established in a stable career and perhaps with family ties whereas others will be enjoying an extended transition from youth to adulthood which may incorporate prolonged financial dependency on parents. For the former group, their own household arguably gives the most accurate foundation for assigning social class, with natal class of diminishing consequence. For the latter group, in technical terms if a full-time student they are not allocated to a social class in the NS-SEC schema. If they have been in employment between graduating and entering postgraduate study, this could be taken as the basis for assigning social class. Doing so could be misleading however, since such jobs are likely to be a 'stop-gap' between study, further study and a probable managerial/professional career.¹⁴⁶ Whilst it may be possible to distinguish between postgraduates on such different trajectories by separating full-time and part-time students and taking into account a postgraduate's age, this inevitably reduces the cell sizes in contingency tables somewhat.¹⁴⁷

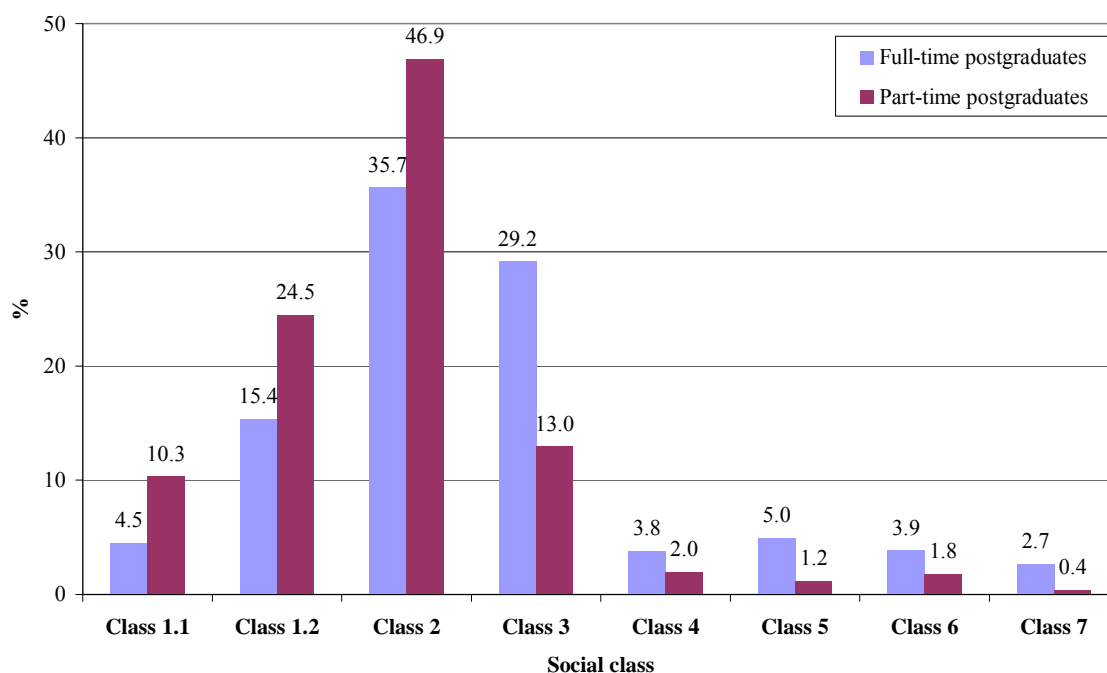
Figure 8.5 compares the social class of current postgraduates' previous occupations across modes of study (where there was one). Clearly, those studying part-time are much more likely to have been in managerial/professional positions than those studying full-time. The difference between the proportions in Class 3 is particularly noteworthy. Very

¹⁴⁶ This measurement problem hints at a more fundamental issue in social mobility research, that much of the evidence on the process of social mobility relies on snapshot measurements which may not capture the *dynamic* nature of a career (Abbott, 2006).

¹⁴⁷ Note also that the questions used to derive data on current and previous employment were omitted on some versions of the pilot questionnaire and hence the number of respondents is lower on these items than some others. This affects respondents from the University of Ravingham only.

few of the postgraduates were previously self-employed or in any kind of routine work. The mean ages of full-time and part-time postgraduates who had been in employment prior to entering the course were 31.1 and 39.4 years respectively. This evidence supports the contention that full-time postgraduates are seeking to improve their occupational standing, whereas part-time postgraduates are consolidating or improving their position within the service-class. Indeed analysis of the current employment of part-time postgraduates shows that of those in employment, only 3.3% are in Class 5 – 7 occupations, almost half (46.9%) being in Class 2 positions.

Figure 8.5: Social class categorisation of occupations held by postgraduate students prior to commencing their current course (where known; n = 1,459)



Source: online survey

As in Chapter 6, it would be worth examining whether students from lower social class backgrounds are obliged to combine full-time study with part-time employment in greater numbers than those from professional/managerial backgrounds. For PhD students, part-time employment might be considered a component part of the qualification if it comprises work as a teaching or research assistant. The objective is not simply to earn

money, but also to gain experience in academic or research work which will enhance the value of the PhD. Where a postgraduate is following a full-time taught masters course however, concurrent employment is more likely to be out of necessity than choice. Unfortunately, there are too few postgraduates in the survey with all the necessary information to give any meaningful indication in this area.

Perhaps a more informative alternative is to look at the means by which postgraduates from different social class backgrounds fund their studies. Figure 8.6 shows the source of funding for tuition fees and maintenance by natal social class for both research and taught higher degree students. Only full-time postgraduates are shown because part-time students are much more likely to be funded by their employer or working and independent. There appears to be an absence of research on social class and postgraduate funding. The sole exemption of which I am aware is Zimdars' (2007a) finding, in relation to postgraduates at the University of Oxford, that research council studentships were allocated on a meritocratic basis. The paucity of research is a little surprising given the attention paid to the introduction of tuition fees at undergraduate level and the potential disincentive some argued this would present to students from lower social class backgrounds. Tuition fees for postgraduates have always, with a few exceptions, been unregulated.

Full-time research degree students are most likely to be funded for tuition fees and maintenance by the research councils. There is some indication that postgraduates from Classes 1 -3 are more likely to attract research council support than their counterparts from Classes 4 – 7. However more detailed analysis shows this is likely to be related to differential attainment at first degree-level, at least in part (echoing Zimdars' finding reported above). A number of sources of funding are, taken alone, relatively insignificant (charities, companies and so on). More interesting is the proportion of postgraduates paying for themselves or relying on support from their family. This is the main source of

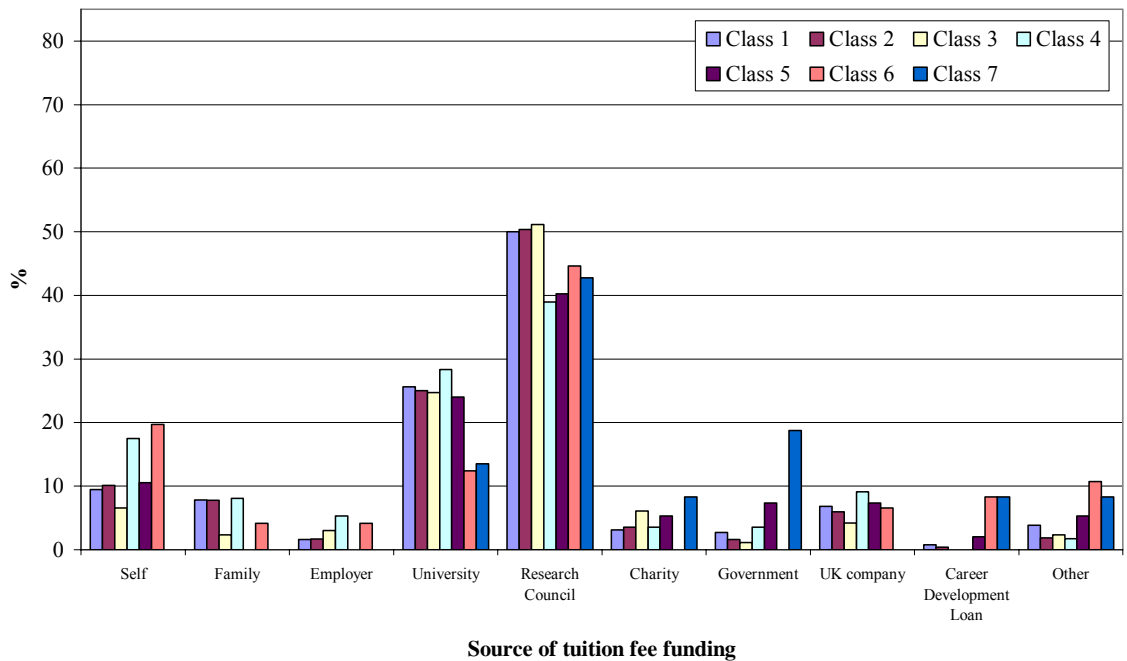
funding for most full-time masters students in the sample. Class 1 and 2 masters students are somewhat less likely to be paying their own tuition fees and those from Class 1 are particularly likely to rely on their family to pay them. Class 7 higher degree students are dependent on Career Development Loans to a greater extent than those from other classes. On the whole though, there are few discernable social class trends which are consistent across tuition and maintenance funding and type of qualification. This lack of a clear social class pattern is perhaps surprising.

One potential explanation of the considerable overrepresentation of the higher social classes in the online survey dataset is access to greater familial economic resources to support postgraduate study in the absence of third party support. In other words, where a graduate is unable to obtain research council, charitable or other funding to cover tuition fees and maintenance, some will be able to find sufficient cash themselves whereas others will not (and will then not be able to take up a postgraduate place, or will not even consider applying). On the face of it, this hypothesis is given only very limited supported by the evidence: Class 1 postgraduates are sometimes more likely to report self- or family-funding, but not consistently. It may be that there is an element of selection bias, in that those Class 5 – 7 graduates who do manage to enter postgraduate study are atypical, having greater financial resources than most graduates from the same class. It may also be the case that service-class families are more likely to view the cost of postgraduate study as an investment (as is reported at undergraduate level), rather than simply as a debt or opportunity cost in foregone earnings (Callender and Jackson, 2008).

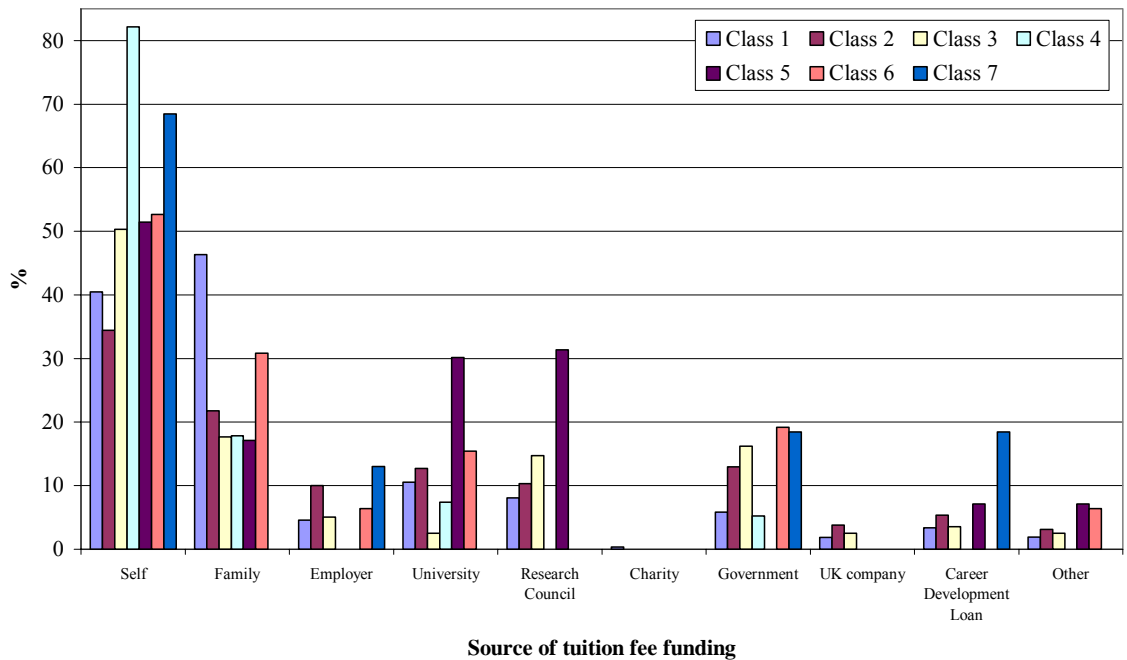
A prospective cohort study with a qualitative component would provide a more suitable basis for addressing these questions, but some further light can be shed by looking at postgraduates' liability for tuition fees as an undergraduate. Data was collected from the current postgraduates regarding whether they were liable for their own tuition fees as undergraduates. Tuition fees for full-time first-degree study were introduced following the

Figure 8.6: Source of funding by social class and type of funding (full-time postgraduates only)

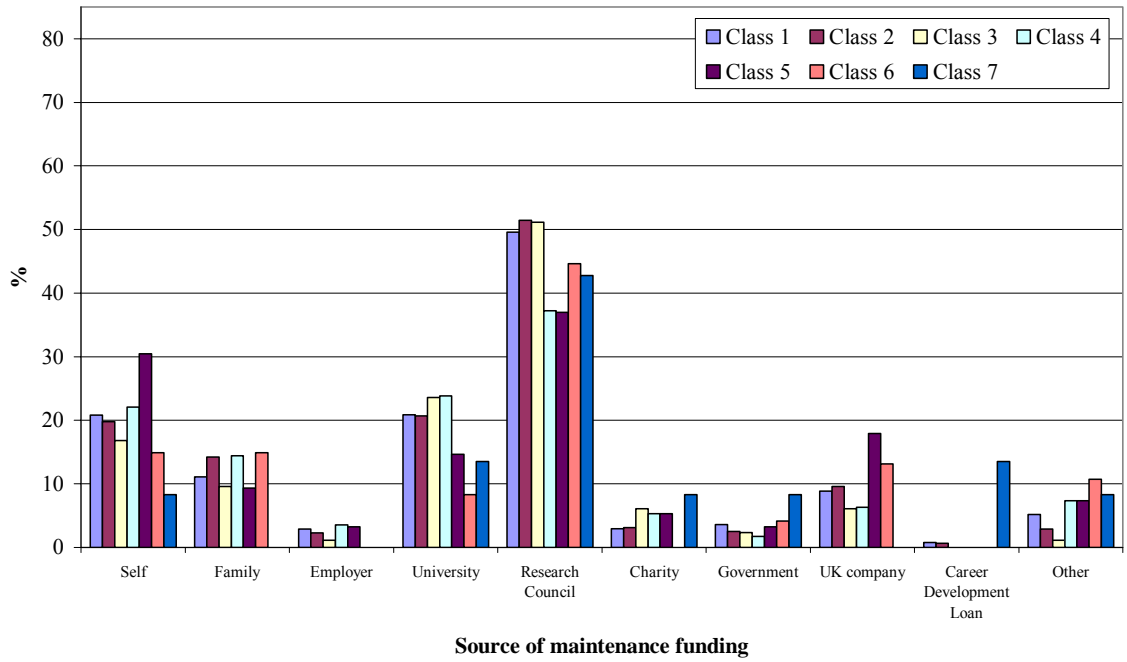
(a) Tuition fee funding – research degree students



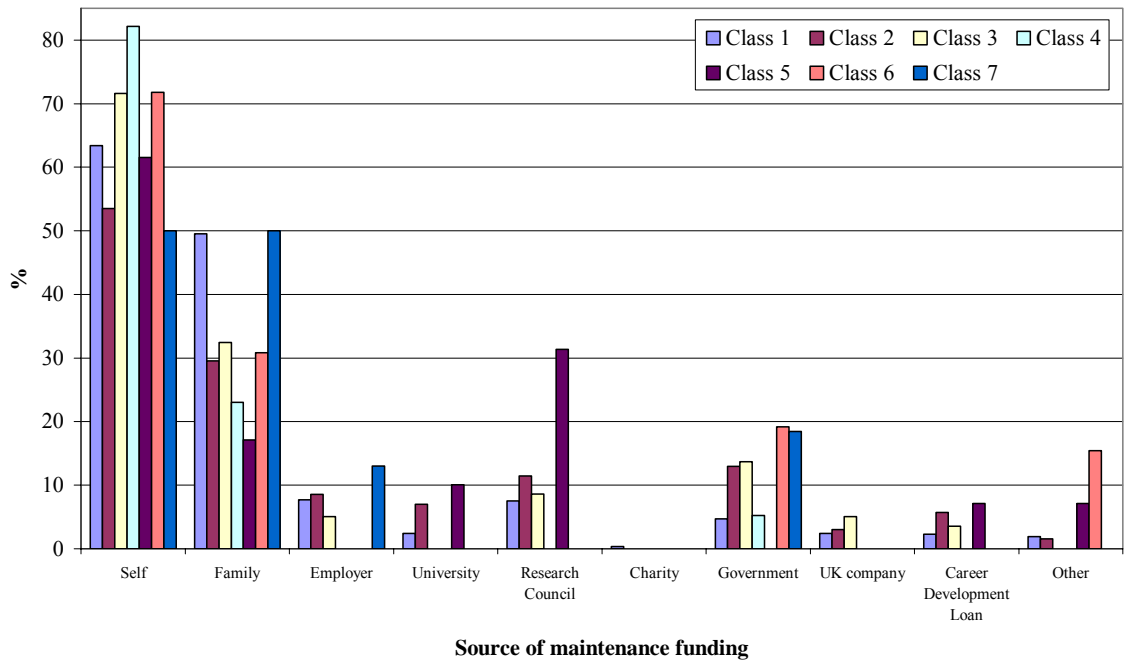
(b) Tuition fee funding – taught higher degree students



(c) Maintenance funding – research degree students

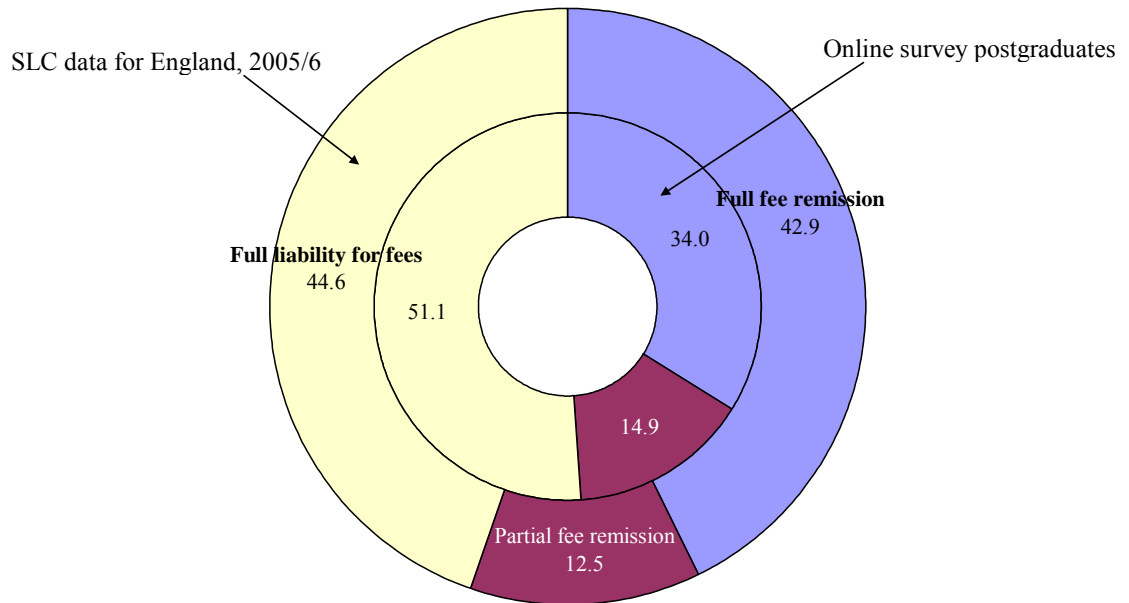


(d) Maintenance funding – taught higher degree students



Source: online survey

Figure 8.7: Comparison of liability for first-degree tuition fees between respondents to the online survey of postgraduates (n = 1,016) and all undergraduates in England, 2005/06



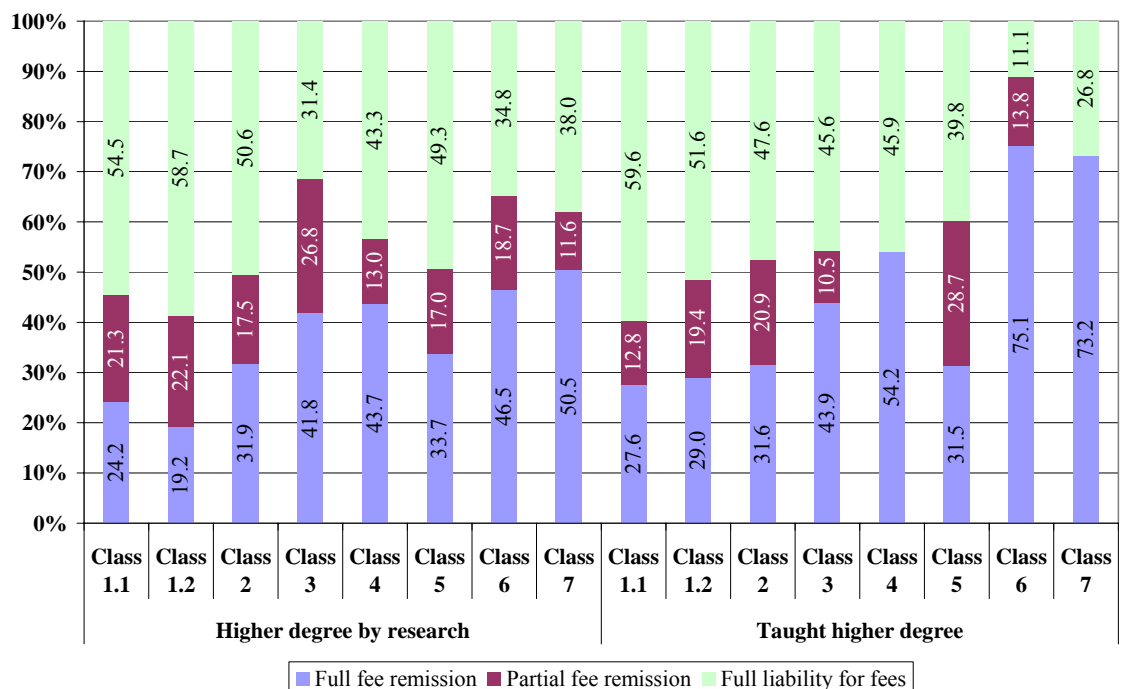
Sources: online survey of postgraduates; SLC (2006). Note: those who entered undergraduate study prior to 1997 or who completed their undergraduate degree outside the UK are excluded.

‘Dearing’ report of 1997 (NCIHE, 1997), initially at the level of £1,000 per academic year and means-tested based on household income. The maximum permissible tuition fee was increased for 2006 entrants to £3,000 and funding arrangements were changed substantially, although the postgraduates in the survey all entered undergraduate study prior to this latest change. Liability for undergraduate tuition fee can therefore be taken as an approximation to household income at the time of undertaking a first degree, potentially giving a useful contrast with social class based on occupation.

Some 38% of the respondents entered undergraduate study prior to the introduction of the Dearing fees and so were, by definition, not liable for their own fees. A further 6% did not undertake their first degree in the UK, 5% were supported by their employer and 3% from other sources. Figure 8.7 shows the liability for first-degree tuition fees for the remaining postgraduates, alongside the comparable English figures for 2005/06 (2006 being the modal year for first-degree graduation for the respondents to my online survey).

Postgraduate respondents were clearly less likely to have received full remission of fees than the undergraduate population as a whole, although the overall difference is not staggering. Besides, other factors associated with progression to postgraduate study may show similar differences in fee liability: for instance, those with first-class honours degrees are less likely to have received full fee remission (and are more likely to enter postgraduate study). Unfortunately I lack the data to verify this.

Figure 8.8: Liability for undergraduate tuition fees by type of postgraduate qualification and social class (n = 557)



Source: online survey

Figure 8.8 presents a comparison of first-degree tuition fee liability by social class and type of postgraduate qualification studied. For both kinds of higher degree programme, the general impression is that postgraduates from a professional/managerial background were less likely to have full fee remission than those from intermediate class backgrounds, who in turn had lower rates of full fee remission than those from routine occupational backgrounds. This suggests a correlation between social class background and financial

means broadly in line with expectation. Of course it is interesting that this correlation is far from perfect as there are postgraduates from professional/managerial backgrounds who had full remission from undergraduate fees and conversely postgraduates from routine occupational backgrounds who paid full fees. However it is evidence that, as a group, the postgraduates from working-class backgrounds are not noticeably well-heeled in financial terms. Whereas the evidence on source of funding for postgraduates' current courses suggests less financial difference between postgraduates of different natal class backgrounds than might have been expected, this finding is not repeated for undergraduate tuition fee liability.

A possible explanation for these apparently conflicting findings relates to accumulation of student debt. Maintenance funding for full-time undergraduates shifted gradually during the 1990's from a regime of means-tested grants to a student loan system. Reports from academic studies (e.g. Callender and Wilkinson, 2003) and surveys by commercial organisations (Barclays Bank, 2005) show consistently increasing levels of student debt over this period, comprising student loans for fees and maintenance, bank overdrafts and other commercial credit accumulated in support of undergraduate study. Commentators have suggested this accumulation of student debt will become a disincentive to postgraduate study (e.g. Brown, 2008; NPC, 2006; Wakeling, 2003a, 2003b) although there is to date little evidence as to whether this prediction is borne out. Stuart *et al* (2008) found that *fear* of debt significantly predicted disinclination to enter postgraduate study as a first destination, but not *actual* debt. Nevertheless, a commonsense approach to the issue might reasonably forecast that students with high levels of student debt will be averse to the further direct and opportunity costs implied in postgraduate study. Thus it could be that students who can financially afford to enter postgraduate study are those who have either managed to avoid large undergraduate student debt, have managed to clear most of their debts between completing undergraduate study and entering

a postgraduate course or who can command sufficient resources (e.g. through their family) to support them regardless of their existing debts. If this is the case, then the main impediment to postgraduate study might still be financial. That is, the jump in the proportion of postgraduates from the professional/managerial classes is related to their having more ready access to sufficient financial resource. Working-class students who ‘survive’ to postgraduate level will thus either have sponsorship or else will have a comparatively low level of undergraduate debt (and conceivably both). Such a situation would be similar to the conclusion I drew from my earlier research into this subject (Wakeling, 2003a, 2003b, 2005a) that lack of financial resources means working-class graduates proceeding to postgraduate study have higher academic attainment on average, because they are dependent on scholarships. Better-resourced middle-class students can pay their own way and hence can enter postgraduate study with lower attainment at degree level. In other words, it is mainly lower-achieving working-class students who are prevented from entering postgraduate study. This conclusion, of course, is called into question by the findings reported in Chapters 6 and 7 from the destinations dataset.

Again, since the financial support package for undergraduates has changed markedly over time, the analysis of the postgraduates’ debt levels has been limited to those graduating in 2000 or later. Prior to entry in 1997, student debts were generally much smaller because tuition fees were paid for all UK-domiciled undergraduates and maintenance grants or parental contributions were generally larger than the loan element of maintenance funding. Furthermore, it is reasonable to expect that many of those who graduated before 2000 will have already cleared part or all of their undergraduate debts. Figure 8.9 reports the debt levels of the postgraduates who graduated in or after 2000.

The postgraduates can be divided into three roughly equal groups on the basis of their undergraduate student debt: those with no debt whatsoever (35.7%); a group with debts of up to £12,000 (34.5%) and a group with more than £12,000 of debt. The overall

median debt (across the three groups) is £9,001 - £12,000. For comparison, the mean student debt of the cohort graduating in 2005 in England was estimated at £8,062 (Callender and Wilkinson, 2007, p. 59). It is difficult to make precise comparisons between existing estimations of student debt and those from the postgraduate survey because I recorded debt in categories, not precisely.¹⁴⁸ Frustratingly most of the extant data on student debt reports only mean or median figures and does not give standard deviations, interquartile ranges or other distributional statistics, making it hard to compare the *spread* of debt liabilities among the postgraduates to debt levels for graduates in general. However the mean debt found by Callender and Wilkinson (2007) is a little higher than what one would expect from the online survey dataset, given the distribution seen in Figure 8.9.¹⁴⁹ Looking in more detail at the three groups, Figure 8.10 shows the distribution of student debt by social class among the postgraduates. This gives some interesting results, most noticeably that postgraduates from working-class backgrounds (Classes 5 to 7) are less likely to have student debt than those from professional/managerial and intermediate backgrounds. Over half of the working-class postgraduates have no student debt, compared to 38% of those from Class 1 and less than a quarter of those from Class 2. On the face of it, this is counter-intuitive: one would expect, given the absence of maintenance grants in the period in question, that working-class postgraduates would have accumulated greater debts because they have much less recourse to parental financial support. Larger debts (over £12,000) are most common in the upper working class (Class 5) and the lower middle class (Class 3),¹⁵⁰ and less common among the lower working class and upper middle class.

¹⁴⁸ Data was collected in this way because many people will not have known their precise level of debt, so detailed estimates could be spurious. Dillman (2007) recommends the use of categories for collecting financial information in surveys as respondents are often reluctant to disclose exact figures.

¹⁴⁹ An approximated weighted mean for the data reported in Figure 8.9 was calculated by multiplying the mid-point of each debt category by its frequency and then dividing by the total weighted n (with the 'mid-point' for the category '£21,001 or more' arbitrarily set as £22,500). This gave a mean debt of £5,972.

¹⁵⁰ Class 4 is excluded from this comparison because it is difficult to place its incumbents in a linear class hierarchy.

Figure 8.9: Percentage of postgraduate students who graduated in or after 2000 having specified levels of undergraduate student debt (n = 1,258)

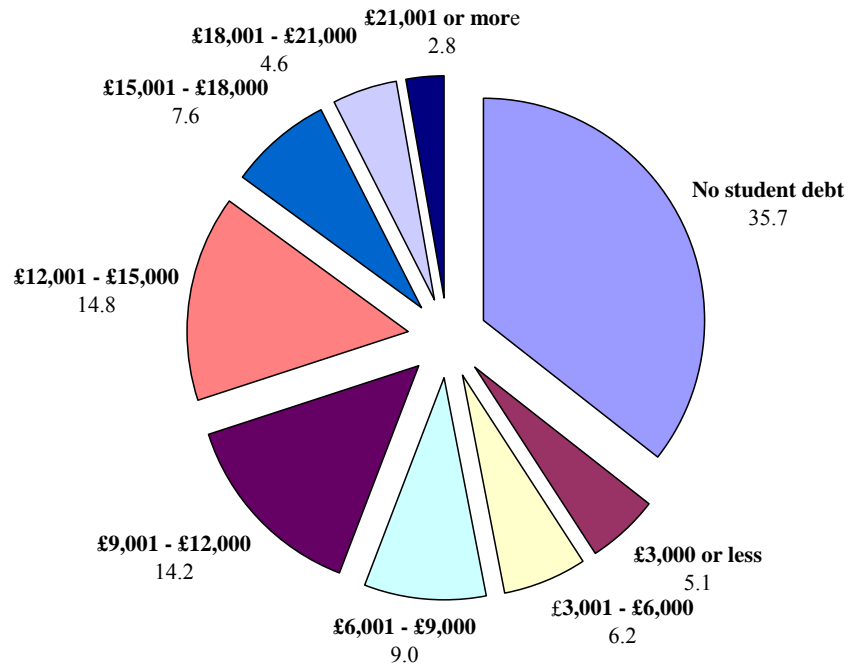
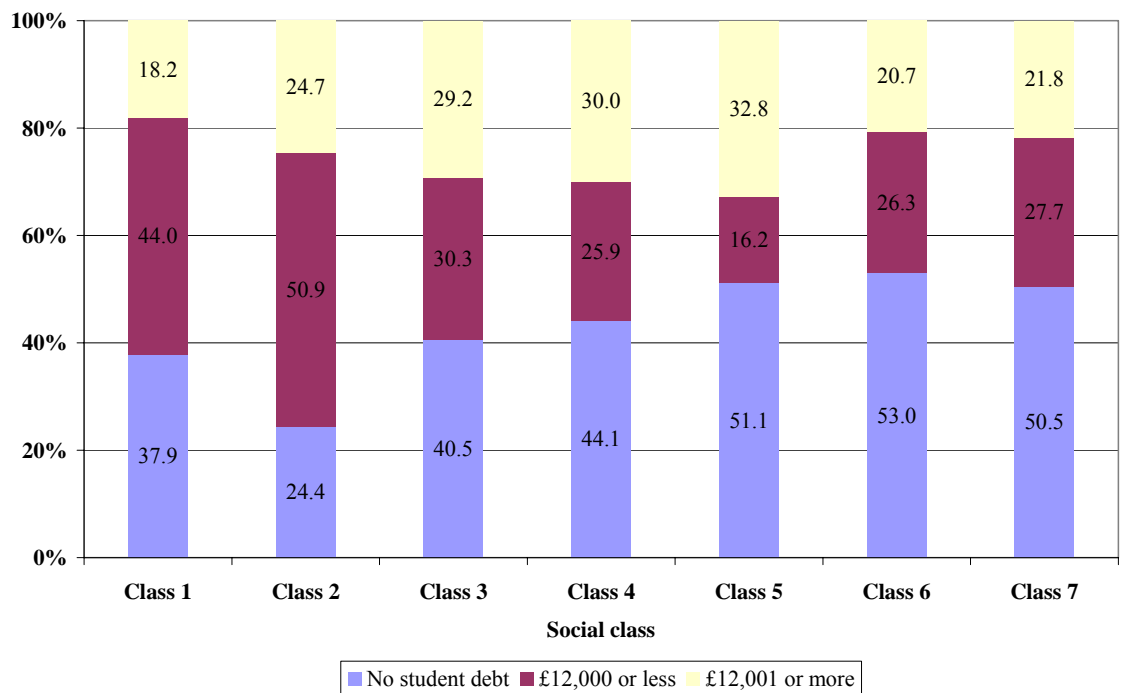


Figure 8.10: Outstanding undergraduate student debt of postgraduates who graduated in or after 2000 by social class (n = 1,022)



Source (both figures): online survey

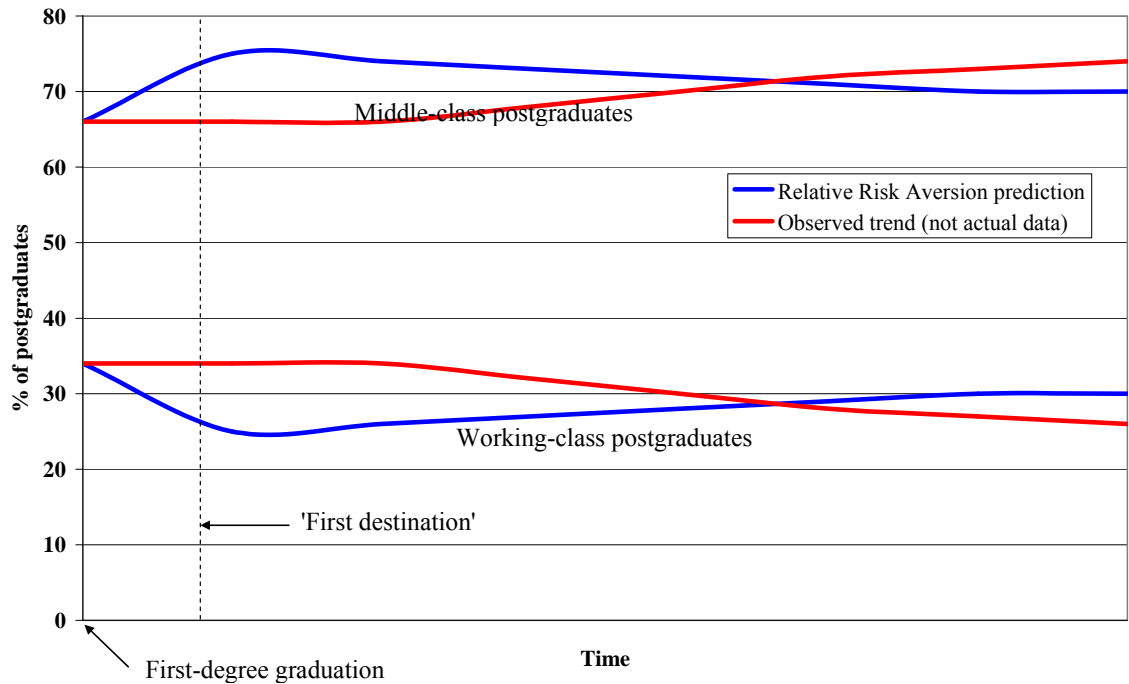
On reflection, there are several possible reasons why these patterns of debt have arisen amongst postgraduates. There is a well-known link between social class background and aversion to debt, demonstrated by some British studies (Callender and Jackson, 2005, 2008). This debt aversion has been cited as a potential deterrent to entry to undergraduate education with the onset of tuition fees.¹⁵¹ Postgraduates from a working-class background could therefore be seen as having access to a greater level of financial resources than is typical for most working-class graduates and hence having lower debt-levels. They are not necessarily less debt-averse but rather have less need to go into debt and are hence atypical of their social class. Alternatively postgraduates from a working-class background could be a group who consciously sought to avoid debt as undergraduates by making ‘sacrifices’ (such as part-time working alongside study, subsisting on a lower income, using savings, living in the parental home). This latter group may have planned to enter postgraduate study well in advance and thus minimised their liabilities with such a destination in mind. Again, they are debt averse, but are able to avoid debt through lifestyle choices.

Both of these potential explanations are compatible with Relative Risk Aversion theory (Breen and Goldthorpe, 1997). Since postgraduate study is a costly option and is not straightforwardly associated with improved labour market outcomes it is a substantial risk for a working-class graduate. This is reflected in the much lower proportion of postgraduates than first-degree graduates from working-class backgrounds who have terminated their educational career at the first point where they can safely achieve a better class position than their parents. The ‘survivors’ are in some respect different, having higher than average financial resources, be this through having a more affluent than expected family situation (given their class position) or through deliberate planning. In

¹⁵¹ Notwithstanding Callender and Jackson’s findings, the evidence in support of this specific argument is quite weak, since as seen in Chapter 3, participation rates by social class in England have remained remarkably stable across time, regardless of the student funding regime in place in any particular period. However there may be a *general* aversion to the opportunity costs involved in higher education, principally foregone earnings, which is relatively robust across both generous and stringent funding regimes.

both cases, the working-class graduates have an element of protection against adversity if postgraduate study does not generate the anticipated outcome.

Figure 8.11: *Notional depiction of social class representation in postgraduate study over time, as anticipated under Relative Risk Aversion theory*



It is difficult to accept such an argument though, in the knowledge that social class differences are so slight in immediate progression to postgraduate study. Were the rational action mechanisms outlined in operation then we probably should expect an inversion of the patterns observed. That is, entering postgraduate study immediately after a first-degree would be the point at which debt levels are highest and hence financial considerations paramount. Graduates from a working-class background considering entering postgraduate study would be more likely to consolidate their position before returning to university at a point where they enjoyed financial security. Where a graduate has followed the traditional path, entering a first-degree and graduating at age 21 or 22, this would surely mean returning to postgraduate study during their mid- to late-twenties, prior to ‘settling down’

in a stable relationship, starting a family and so on.¹⁵² Thus under RRA, although we would expect to see further working-class attrition at postgraduate level, the theory would predict this to be starkest among graduating cohorts, with a decline in social class differences across time. Figure 8.11 demonstrates this graphically (with fabricated data): it shows, for RRA (blue line) class differences at graduation which are exacerbated in immediate progression to postgraduate study but which dissipate somewhat over time. The apparent actual trend is the inverse (red line): no real social class difference in immediate progression, but with increasing difference for later entry to postgraduate study.

Table 8.2: Ordinal logistic regression model output predicting category of student debt liability for current postgraduates

Explanatory variable	β	S.E.
<i>Social class</i>		
1 Higher managerial/professional	(reference category)	
2 Lower managerial/professional	0.515 **	0.181
3 Intermediate occupations	-0.033 n.s.	0.283
4 Small employers etc	-0.164 n.s.	0.335
5 Lower supervisory/technical	0.041 n.s.	0.382
6 Semi-routine occupations	0.746 n.s.	0.545
7 Routine occupations	-0.144 n.s.	0.627
<i>Liability for first-degree tuition fees</i>		
Full fee remission	(reference category)	
Partial fee remission	-0.704 **	0.244
No fee remission	-1.628 ***	0.188
<i>Qualification aim</i>		
Higher degree by research	(reference category)	
Taught higher degree	-0.498 *	0.213
PGCE	0.082 n.s.	0.257
Other postgraduate qualification	-0.531 *	0.252
<i>Gender</i>		
Male	(reference category)	
Female	0.220 n.s.	0.167
Threshold of 'no student debt' category	-2.446	0.270
Threshold of '£12,001 or more debt' category	0.172	0.248

Pseudo $r^2 = 0.086$; $n = 658$; model fit statistic $p < 0.001$

¹⁵² This is the *statistically* normal lifecourse, but it is not intended to imply normativity.

To investigate the relationship between debt, social class and tuition fee liability among the postgraduates who responded to the survey, an ordinal logistic regression model was fitted to predict level of student debt using the three-category variable utilised in Figure 8.10 (no debt, \leq £12,000, $>$ £12,000). Predictor variables were undergraduate tuition fee liability, social class, current qualification aim and gender. The model was fitted only for students who completed their first degree in 2000 or later and who were therefore subject to the £1,000+ means-tested tuition fee regime. The results are presented in Table 8.2.

Controlling for qualification aim, fee liability and gender, social class itself seems to have little direct influence on level of indebtedness. The coefficients for social class are not statistically significant, with the sole exception of Class 2, graduates from which are more likely than those from the other classes to be in the higher categories for student debt. Running the model with dummy variables for social class omitted does not substantially affect the coefficients for the other variables and leads to only a relatively small worsening in model fit. The model also shows that those on taught courses (excluding the PGCE) are less likely to have high levels of student debt, holding other factors constant. Since most of these students will be self-financing this would suggest that such students are able to draw on financial resources from the family (to cover their postgraduate costs and to have avoided undergraduate debt) or that their prudence in avoiding undergraduate debt has allowed them to afford postgraduate study. Further support for the former explanation is provided by the coefficients for undergraduate fee liability. Here those postgraduates who were liable for the full tuition fee at undergraduate level are significantly less likely to be in the higher debt categories. It seems reasonable to assume that these postgraduates have access to greater financial resources through their family than those who were not liable for undergraduate tuition fees. It is also interesting to note that, in my sample at least, the model predicts that women were more likely to be in the higher debt categories, holding

the other variables constant. Callender and Wilkinson (2007) found that in Scotland, women had greater student debt than men, but the reverse was true in England. Across the whole economy, research suggests that men have much higher debt levels than women, but that women tend to have more debt ‘problems’ (Westaway and McKay, 2007).

The overall impression given by the preceding comparison of the social class background and assumed financial assets (or ‘economic capital’) of the postgraduates is that money has some influence over entry to postgraduate study, especially to taught courses. However the findings are somewhat paradoxical and conflicting at times. Model B in Chapter 7 showed a significant, although relatively small difference in progression from first-degree to postgraduate study according to undergraduate tuition fee liability. Those liable for the full fee were slightly less likely to proceed to a research degree or PGCE and slightly more likely to proceed to a taught higher degree, controlling for social class and several other factors, suggesting a small advantage in entering masters study for those with greater financial resources. Examination of funding source for postgraduate study from the online survey dataset showed few social class differences. Postgraduates from a working-class background were less likely to have been liable for their undergraduate tuition fees than service- and intermediate-class postgraduates, but the difference was not especially stark. Moreover working-class postgraduates were seen to have lower debt levels than those from most other social classes and there was little relationship between social class and student debt levels among the postgraduates as a whole. The anomaly in the apparent relationship between social class and access to postgraduate study between the destinations dataset and the online survey dataset remains unexplained. However, the patterns observed in respect of financial factors provide some hints as to plausible explanations for the differences. A promising candidate is the argument that working-class postgraduates in the online survey dataset are atypical of working-class graduates in general. However lacking data about the ‘missing’ working-class graduates, I cannot confirm or refute this

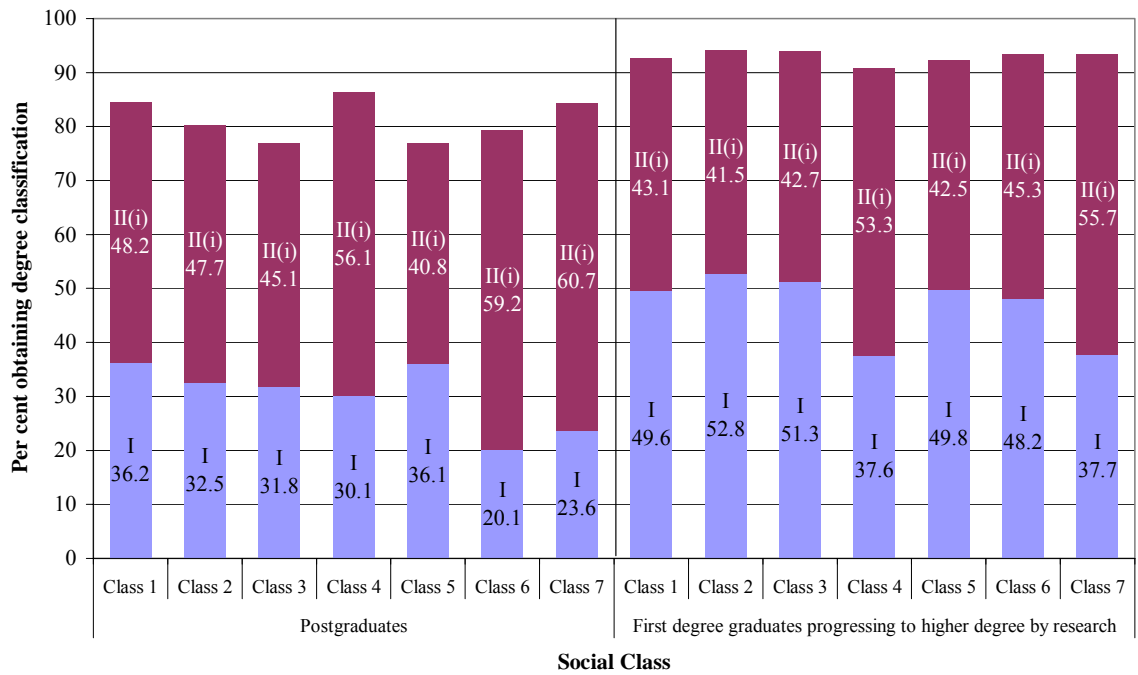
hypothesis. Further research with different datasets and possibly incorporating a qualitative dimension would be required adequately to adjudicate.

Postgraduates' educational attainments as evidence of cultural capital

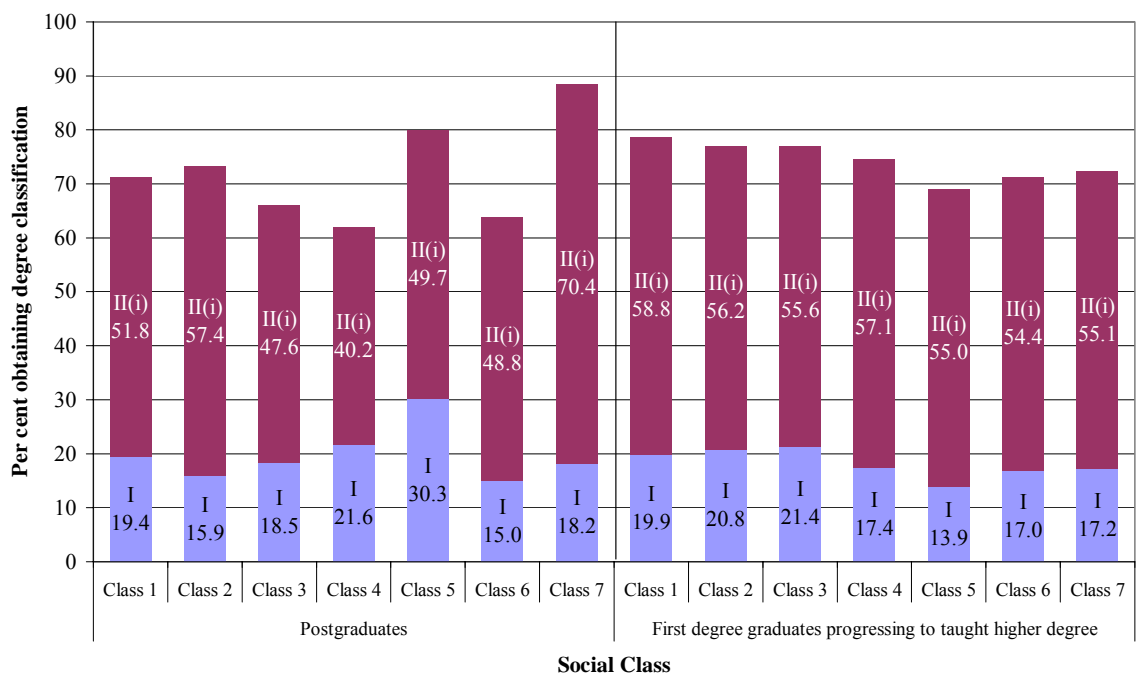
RRA's 'rival' theory, cultural capital theory, would predict a higher-than-average level of academic attainment among working-class postgraduates. In other words, an alternative plausible explanation of why the working-class postgraduates are 'different' could be their having an atypical level of *cultural* rather than economic capital for their social class. One might expect those taking research degrees in particular to be higher in cultural capital. We have already seen that those taking research degrees were the most likely of all the postgraduates to have parents who were also graduates or had higher degrees. However there are other potential proxies for cultural capital in the online survey dataset (bearing in mind the difficulties with the concept discussed earlier). Of the three types of cultural capital that Bourdieu identifies – objectified, embodied and institutionalised (Bourdieu and Passeron, 1977) – the latter is likely to be the most important at the point of entry to postgraduate study. The application and entry process is much more heterogeneous at postgraduate than undergraduate level, with some courses being 'recruiters' where supply outstrips demand but many being 'selectors' where demand outstrips supply (and there is effectively no cap on numbers). Even so, most admissions decisions will begin with an assessment of an applicant's qualifications as stated on their application form. It is generally therefore institutionalised capital as represented by qualifications, especially subject, grade and type of degree and the institution where it was studied, which are key to ensuring access to a postgraduate course. Embodied cultural capital, such as presentation of self at interview (or perhaps in written form in a personal statement or research proposal) may also be important in certain circumstances, but will usually follow

Figure 8.12: Degree classification obtained by current postgraduates and first-degree graduates 2004/05 by postgraduate qualification aim and social class

(a) Higher degree by research



(b) Taught higher degree



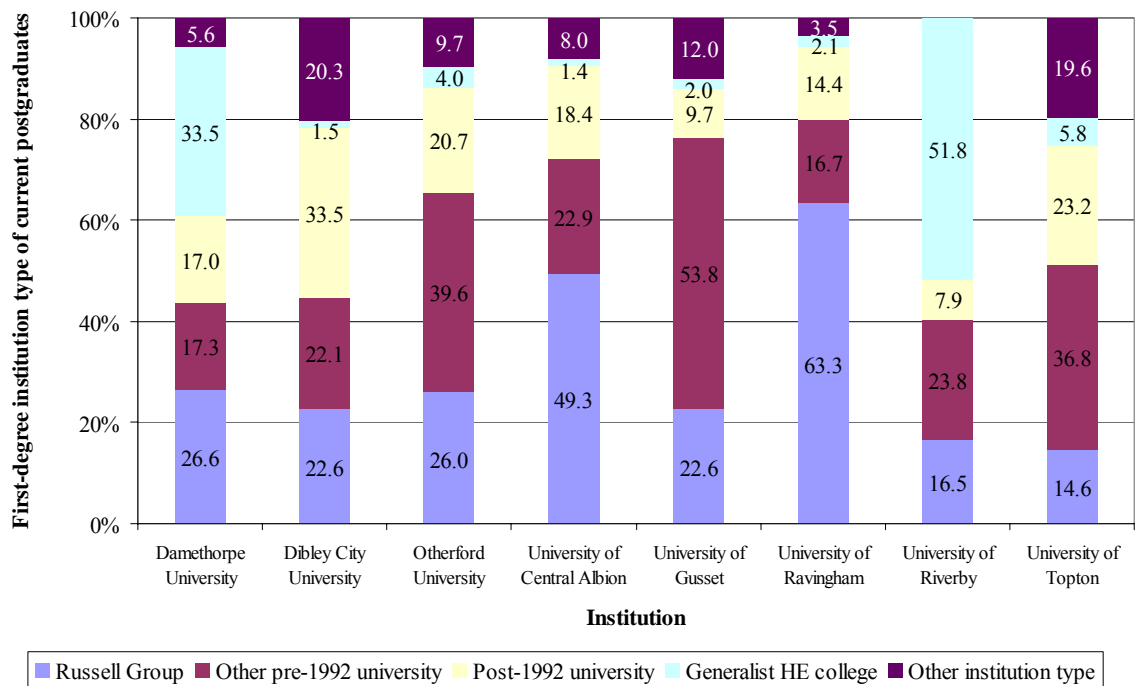
Sources: DLHE 2004/05; HESA Student Record 2004/05; online survey

consideration of the degree. Thus we would expect that postgraduates, particularly working-class postgraduates, have ‘good’ degrees from institutions which are commonly viewed as the most prestigious.

Figure 8.12 compares the first-degree classifications of the current postgraduates (by qualification aim) with those of first-degree graduates progressing to the same postgraduate qualification, by social class. There is little difference in degree classification profiles across the social classes among those progressing to higher degrees by research and taught higher degrees. The current research postgraduates are not as well qualified as the newly-minted first-degree graduates progressing to higher degrees, having a lower proportion of ‘good’ degrees and a substantially lower proportion of firsts, but they show a similar absence of any clear social class trend in first-degree attainment. Among current taught higher degree students however, those from Classes 5 and 7 have a somewhat higher proportion with ‘good’ degrees. We might interpret this latter pattern as support for cultural capital theory: only those working-class graduates who are high in cultural capital (i.e. they have a good degree) can gain entry to a postgraduate qualification; or alternatively only those who, by virtue of their academic success, feel ‘at home’ in the university system, persist into postgraduate study. The problem with these interpretations is that similar patterns should also be seen for research postgraduates, but are not. Moreover, one could apply RRA theory: a taught higher degree, probably self-funded, is only a worthwhile prospect if one is likely to successfully complete the course. Thus lower-class students with lower grades avoid masters study as too risky.

Although it is not straightforwardly an indicator of academic attainment, the nature of the previous educational institutions attended by postgraduates may also comprise institutionalised cultural capital. Formally, a degree from any British university is of equal standing to that from any other; in practice however the awarding institution is often taken as a signal as important as – if not more important than- the classification of the degree.

Figure 8.13: First-degree institution type of current postgraduate students by current institution



Source: online survey

For example, Brown and Hesketh (2004) showed how graduate recruiters valued degrees from ‘elite’ universities more highly than those from other institutions. As shown in Chapters 6 and 7, the type of institution a first-degree graduate attended did have some effect on their progression to postgraduate study (although it was not possible to conclude with certainty that this was an ecological effect). However a number of other studies have indicated that previous educational institution influences subsequent educational (and labour market) outcomes above and beyond ability and demographic factors (Ayalon, *et al*, 2008; Bourdieu, 1996; Brennan and Shah, 2003; Power *et al*, 2003; Reay *et al*, 2005; Shavit *et al*, 2007; Wakeling 2005a). Power *et al* (2003), for instance, found in their study of high-ability school pupils that women who had attended independent schools were more likely to enter postgraduate study than men who attended independent schools or state-school pupils.

One in eight postgraduates in the online survey dataset (12.7%) had attended an independent school. The proportion from independent schools among 2004/05 first-degree graduates proceeding to postgraduate study was very similar (13.6%).¹⁵³ These figures were disaggregated according to the postgraduate's qualification type. There was little difference in school type amongst higher degree students across the datasets and type of higher degree (taught or research). However a large drop in the proportion from independent schools was observed among those studying for and progressing to a PGCE (around 7% independently-educated). This mirrors both the findings in Chapters 6 and 7 in respect of social class and entry to a PGCE and Zweigenhaft's (1993) thesis about the influence of private- and public-sector secondary schooling on the subsequent destinations of Harvard graduates.

Chapters 6 and 7 showed that the institution attended for first-degree study was a crucial factor in predicting progression from a first degree to postgraduate education. We would thus expect the current postgraduates to have attended a relatively narrow range of institutions for their first degree. Of course the fact that the sample of institutions was small and purposive does mean there is a range of different postgraduate institution types, but will almost certainly also mean that the first-degree institutions of the postgraduate respondents are not representative. We might reasonably expect each institution to recruit a substantial proportion of its postgraduates from among its own alumni, for instance.¹⁵⁴

Figure 8.13 shows the type of institution attended for first-degree study by current postgraduates at the institutions which took part in the online survey. More than half of postgraduates in the pre-1992 universities in the sample (Otherford, Central Albion, Gusset, Ravingham and Topton) were also from pre-1992 universities, but as about 64% of

¹⁵³ Just under 7% of school pupils in the UK attend independent schools, according to the Independent Schools Council (see: http://www.isc.co.uk/FactsFigures_PupilNumbers.htm, accessed 8 September 2009).

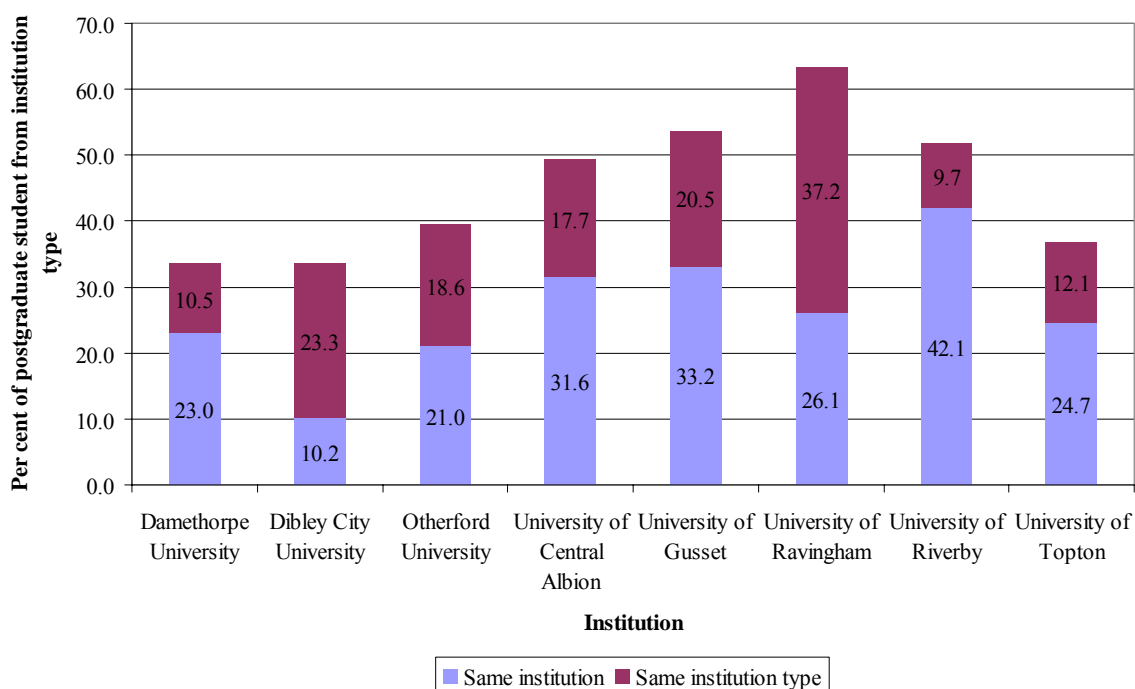
¹⁵⁴ To the best of my knowledge – and somewhat surprisingly – there is no published information on the previous institution attended by postgraduates. In fact this information is not collected by HESA. Although individual institutions sometimes collect data on postgraduates' previous institution for marketing purposes, I believe that my survey may offer unique comparative data on this issue.

first-degree graduates progressing to postgraduate study in 2004/05 graduated from pre-1992 universities, this is hardly surprising. More remarkable is the relative cross-sector recruitment of the different universities. The more research-intensive pre-1992 universities in the sample (Central Albion, Ravingham and Gusset) recruit a substantially larger proportion of their graduates from pre-1992 universities and in the cases of Central Albion and especially Ravingham, Russell Group graduates are particularly overrepresented. Only a relatively small minority of the pre-1992 universities postgraduates previously attended post-1992 universities and HE colleges. In fact the evidence presented in Figure 8.13 hints that post-1992 university graduates are not returning to postgraduate study in the same numbers as their pre-1992 university peers. Around 28% of 2004/05 graduates progressing immediately to postgraduate study had completed their first-degree at a post-1992 university. At all except one of the institutions in the sample we can speculate that post-1992 university graduates are underrepresented. The only institution where they are not underrepresented is itself a post-1992 university. Pre-1992 university graduates however are present in substantial numbers in other types of institution. This suggests greater self-recruitment of postgraduates within the research-intensive sector.

Figure 8.14 confirms this, reporting the extent to which postgraduates are recruited from the exact same institution and the same sector. However there appears to be less direct correlation between institution type and *direct* self-recruitment (student is a postgraduate in their first-degree *institution*) than for *sectoral* self-recruitment (student is a postgraduate in their first-degree institution's *sector*). One might expect that students from lower social class backgrounds would be most likely to remain in their first-degree institution due to the potential higher costs (financial and, perhaps, emotional) of moving elsewhere. Couched (perhaps over-elaborately) in Bourdieusian terms, one could alternatively say that lower class students are less likely to possess the portable embodied cultural capital to facilitate the transition to another institution. This hypothesis is not

supported by the evidence in Figure 8.14. The institution showing the greatest retention of its first-degree graduates as postgraduates is Riverby, a HE college-turned-university. Given the lack of previous research in this area and the limitations of the online survey dataset, it is not possible to determine if there are other things going on here: some institutions, for instance, may be more astute than others in marketing postgraduate study to their alumni. However there does *not* appear to be significant ‘trading up’ by graduates of post-1992 into pre-1992 universities for postgraduate study, contrary to what was found on a smaller scale by Zimdars (2007a) and Smith (2007).

Figure 8.14: Per cent of current postgraduates with a first degree from the same institution or same type of institution, by institution



Source: online survey

Analysis of the interaction of social class and first-degree institution (not shown) did not throw up any consistent patterns. That is, there were differences between the social classes in the proportions changing institution/sector between undergraduate and

postgraduate study but the differences showed a random fluctuation with no apparent trend. Research students were more likely to have graduated from their first-degree institution (about one in three had done so) than taught higher degree and PGCE students (roughly one in five had returned to their alma mater), but again, adding social class as an additional variable was not revealing.

Institution would appear to be a signifier of importance in accessing postgraduate study. Whether this means it is a signifier of 'cultural capital' or something else (perhaps more mundanely, aptitude for or interest in research study) is difficult to tell with the data available. It may say something about path dependency on the way to postgraduate study, a point which will be taken up in discussion of sponsored and contest mobility in the concluding chapter.

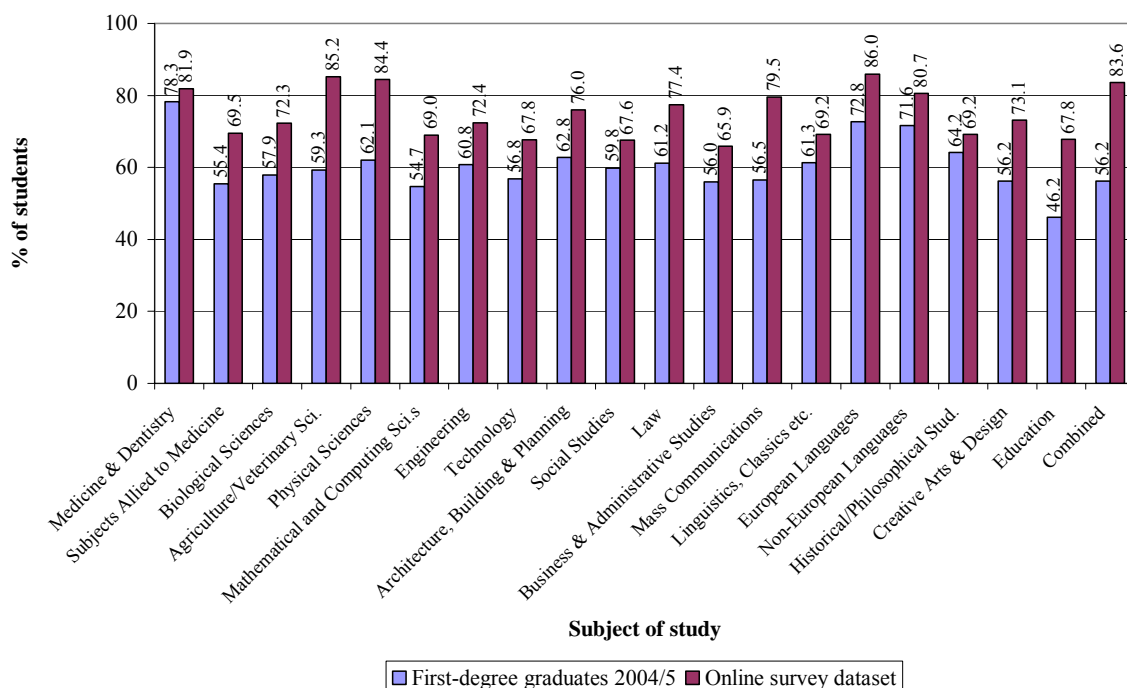
Subject of study

A point made throughout this thesis is the primacy of subject of study in understanding socio-demographic patterns among higher education students. In Chapters 6 and 7, for instance, it was shown that there were substantial disciplinary differences in progression to postgraduate study even taking into account a variety of personal and social characteristics of students, such as sex, social class and age and also academic factors such as degree classification and first-degree institution. A final potential explanation to be tested to account for the discrepancy in the social class profile of postgraduates between the two datasets is therefore subject of study.

As noted previously, showing that subject differences between undergraduate and postgraduate levels lie behind the social class differences between the two datasets does not in itself mean that there is no social class barrier in accessing postgraduate study. It is unlikely that differential continuation rates to postgraduate study are due mainly to

variation in social class profiles by subject; but it is plausible, if not probable that social class influences subject choice, thus *conditioning* whether an individual enters postgraduate study. Alternatively, subject of study might not account for social class differences between the two datasets in any way, leaving the discrepancy unexplained.

Figure 8.15: Per cent of students from Classes 1 and 2 (service class) among first-degree graduates 2004/05 and current postgraduates by subject of study



Sources: DLHE 2004/05; HESA Student Record 2004/05; online survey

Figure 8.15 shows clearly that the difference in social class profile between the first-degree graduate dataset and the online survey dataset remains when controlling for subject of study. In fact, the social class gap in representation of the service-class is less than 5% in only one subject area, Medicine & Dentistry, where service-class representation is already exceptionally high at first-degree level. There are of course a number of assumptions made in drawing this conclusion. Firstly, one needs to accept that the weighted data in the survey gives a representative picture of postgraduates across subject, despite the clusters in the sample having been selected on a non-random basis. As such, Figure 8.15 should be taken as indicative, not definitive. Secondly the comparison of

postgraduates in a subject to a cohort of first-degree graduates is not entirely like-for-like, because in many subjects it is possible to change subject areas between first-degree and postgraduate levels; indeed in certain subjects this is the norm (business and education are obvious examples).¹⁵⁵ Comparing the current postgraduates' first-degree subject of study to the first-degree graduate cohort in 2004/05 (not shown) saw shifts in the relative overrepresentation of the service-class among postgraduates, but did not change the conclusion of a shift to exclusivity for any of the subjects.

Conclusion

This chapter began by setting out a number of potential explanations for the difference in social class profile between the destinations and online survey datasets. Having reviewed these, my conclusion is that the shift to a more exclusive social class profile among the current postgraduates remains *formally* unexplained; however there are hints towards an explanation which emphasises the significance of first-degree institution. Exploration of the parental education levels of current postgraduates and household composition in terms of social class confirmed the overall impression that the current postgraduate student body has a more socially selective background than for first-degree graduates. Controlling for a number of factors on a bivariate basis did not reduce or remove the difference. These factors included the type of qualification postgraduates were studying, source of postgraduate funding, attainment at degree level, secondary school type attended and subject of postgraduate study. Social class differences between postgraduate institutions were smaller than those across first-degree institutions in the destinations dataset. However

¹⁵⁵ Just as there is no national data or research on shift of institution between first-degree and postgraduate levels (see footnote 154), so there is none on change in subject of study between levels. Comparing the first-degree and current postgraduate subjects of study reported by respondents to the online survey shows *two-thirds* had changed subject group. It is difficult to be precise about the extent of subject changes however due to the nature of the subject categories used. A change from first-degree physics to postgraduate mathematics shows up as a change, but one from politics to economics does not, for instance.

analysis of first-degree institutions attended by the current postgraduates suggested graduates of pre-1992 universities, particularly those research-intensive institutions belonging to the Russell Group, are substantially overrepresented at postgraduate level. There was some evidence that working-class postgraduates had lower debt levels than their service- and intermediate-class counterparts and that they may have been financially atypical of their class, although even this conclusion was somewhat called into question by the findings that social class was not itself a significant predictor of level of debt and that liability for undergraduate tuition fee (a proxy for parental income) followed predictable social class patterns.

Neither RRA nor cultural capital theories found much empirical support among the evidence garnered from the online survey. Whilst there was some indication that financial factors affect entry to postgraduate study, this by no means straightforwardly conformed to the RRA model. Similarly, patterns of institutional recruitment into postgraduate study were consistent with a cultural capital theory interpretation, but in other areas, such as first-degree attainment, social class differences were largely absent, in contradiction of cultural capital theory's expectations.

Once again, it would appear that first-degree institution plays an important role. Graduates of pre-1992 universities, particularly those in the prestigious Russell Group, were overrepresented among the current postgraduates in the online survey. There was a preponderance of pre-1992 graduates among the postgraduates across the different institutions, again suggesting, as in Chapter 7, that entry to postgraduate study may be conditioned in part at the point of initial entry to higher education. This still does not explain the shift in social class exclusivity between the two datasets however.

Whereas the evidence in Chapters 6 and 7 implies that inequality was not being maximally maintained at postgraduate level, the detailed investigation of the social class background of current postgraduates in this chapter would lead to the opposite conclusion.

However the results obtained from both datasets underline the thesis of effectively maintained inequality and the increased importance of institutional stratification in the maintenance and reproduction of social and educational inequalities which has been identified in recent research (e.g. Lucas, 2001; Shavit *et al*, 2007).

The final chapter of the thesis will consider the findings from this and earlier chapters. It will assess their implications for the theories in the sociology of education, social stratification, reproduction and mobility introduced in Chapter 3 as well as for higher education policy as it involves students, institutions, government and funding agencies. The discrepancy between the two datasets in terms of social class and the absence of a satisfactory explanation for the difference calls for an explanation which integrates a number of sociological theories, old and new and for a consideration of the *meaning* of entry to postgraduate study at different points in the lifecourse. It also calls for recognition of the limitations of the datasets used due to their cross-sectional nature, which will in turn generate suggestions for future research.

9 Conclusions

This thesis makes several distinctive contributions to the literature. I have shown that postgraduate study has been neglected by sociologists of education and that there is a strong case for extending the reach of sociological research and theory past first degrees and on to the postgraduate level, not least because of the staggering growth in both undergraduate and postgraduate student numbers in recent years. I have produced new and substantial empirical evidence on social class inequalities in access to postgraduate education to address this omission. Using this evidence, I have carefully described the patterns in entry to postgraduate study by social class in the UK and related them to those trends in social mobility, social change and social reproduction which sociologists of education and stratification have outlined in preceding levels of education. Finally, I have examined competing theoretical explanations of the micro-sociological *processes* by which social class inequalities in education emerge using entry to postgraduate study as an interesting test case. My findings thus have implications both for the sociology of education and for policy in the areas of widening participation in higher education and higher education funding.

In this concluding chapter, I will review the main findings of the research, demonstrating how these successfully meet the main objectives of the thesis. I will begin by reviewing the substantive findings of the empirical research, assessing their implications for sociological understanding of the relationship between educational expansion and social class inequalities. Discussion of the findings in relation to the ‘persistent inequality’ literature and its various iterations will lead on to consideration of the influence of ‘primary’ and ‘secondary’ effects on access to postgraduate study, which in turn will proceed to a comparison of my results to the predictions of the two most significant sociological theories for the explanation of class inequalities in education,

cultural capital and relative risk aversion theories. I will suggest that both theories have something to offer the analysis of class inequalities in postgraduate education, but that neither is sufficient entirely to explain the observed patterns. Here I will draw on ideas of sponsored and contest mobility and ‘weak’ and ‘strong’ meritocracy. Finally, I will extend discussion beyond the central concerns of the thesis itself in two ways. I will reflect on the implications of my conclusions for policy in the area of higher education, an increasingly prominent topic for public and political debate over the last two decades, particularly in the reproduction of social inequalities or alternatively as a vehicle for social mobility. I will also propose a number of potential areas for further research to confirm, refute and/or extend the conclusions of the thesis.

The persistence of social class inequalities

Chapter 3 set out the evidence on the continuation of social class inequalities in higher education. Goldthorpe (2005) suggests that research on patterns of social mobility has achieved something of a sociological consensus, indeed *progress*. I am tempted to repeat this judgement for research on social class and educational inequalities in its descriptive capacity. It was shown that class inequalities in education are persistent, in that they endure across time and place. They are maximally maintained in that advances made by underrepresented groups at one level are negated by increasing inequalities at higher levels. They are also effectively maintained in that reductions in inequalities of overall participation give way to ‘horizontal’ distinctions between subjects, institutions and types of qualification. However, it is also reasonably clear that, despite the effects of ‘credential inflation’ on the maintenance of class inequalities, the influence of background characteristics diminishes the longer an individual ‘survives’ in education. Thus social

class is most important in compulsory education and, whilst there remain class inequalities in entry to higher education, these are less severe.

The evidence on social class and access to postgraduate study confirm these patterns, although not entirely. Simple rates of progression to different kinds of postgraduate study by social class exhibited continued social class inequalities which remained fairly constant across time (2001/02 – 2004/05). Social class inequalities were therefore *persistent*. Determining whether inequalities are *maximally maintained* at postgraduate level is not entirely straightforward based on my findings. There was no evidence of an increase in inequalities across the period 2001/02 – 2004/05; however I found greater class inequalities between levels than were apparent in Rudd's (1975) similar study of postgraduates. This may indicate that expansion at undergraduate level has, indeed, increased inequalities at postgraduate level. The findings from the online survey also support the persistent inequality hypothesis. Although they give only a snapshot of class inequalities among current postgraduates, they too suggest maximally maintained inequality because of the quite striking social class inequalities observed, taking graduating cohorts as a comparator. An important caveat here relates to the point at which entry to postgraduate study occurs: non-contiguous undergraduate-to-postgraduate transitions are staggered, with graduates returning in their twenties, thirties or even forties. This makes establishing a baseline for comparison quite tricky for current postgraduates. Indeed the undergraduate-postgraduate transition is perhaps the first point in the contemporary educational system where immediate continuation to the next level is not the most common outcome.

The results from both datasets clearly vindicate the effectively maintained inequality argument. First-degree institution and to some extent subject of study show social class differentiation which in turn affects progression to postgraduate study. I shall discuss this further below in relation to primary and secondary effects and to theoretical

explanations for class inequalities in higher education. However the existence of qualitative differences (of prestige, reputation etc) across institution means that seemingly small social class differences at the aggregate level conceal larger effective differences. Although the two data sources concur in this respect, they diverge somewhat regarding how far background effects decline at postgraduate level. In the destinations dataset, social class differences in progression to postgraduate study are substantially smaller than is seen in rates of initial entry to higher education. Here, background effects do decline, a result which appears relatively consistent when using alternative socio-economic measures, such as attending independent versus state school or tuition fee liability at undergraduate level. In the online survey, class inequalities are less severe than seen in initial entry to undergraduate study, but background effects appear to have declined to a much lesser extent than in the destinations dataset. Indeed, it would appear that the effect of social class declines for immediate progression to postgraduate study, but then increases again at a later stage.

Patterns of entry to different kinds of postgraduate qualification are not identical. Social class differences in progression to postgraduate study are most evident for the PGCE, where they are the inverse of typically observed patterns. That is graduates from working-class backgrounds are more likely to make this transition than those from professional/managerial families (see further discussion below). Class inequalities are more marked in progression to research degrees than taught higher degrees, although not dramatically so. It is difficult to be definitive about the implications of this finding for the maximally maintained inequality hypothesis, partly because research degrees are still something of a niche qualification.

An important finding concerns the effect of gender. Women have made large and continued gains in higher education participation over the last century (Egerton and Halsey, 1993) such that in British higher education they now outnumber and out-perform

men (Higher Education Policy Institute, 2009). However it has been suggested that gender inequalities and female disadvantage continues in myriad ways. My analysis suggests that women are less likely than men to proceed immediately to postgraduate study once other factors are controlled. This seems to be in addition to social class differences, which remain within both genders. There was also some suggestion that class differences were larger where men and women were entering postgraduate study ‘against type’, that is where they were the minority gender: class inequalities were more marked among women entering research degrees and men entering PGCEs.

I have shown that patterns of access to postgraduate study by social class at the aggregate level are generally in accordance with previous research on class inequalities in education, but with some important provisos. A key concern of the thesis is to move beyond aggregate patterns and to understand further the ways in which inequalities are structured (in terms of institutional pathways, for instance) or indeed whether they are actually unfair or instead simply reflect ‘legitimate’ differences in attainment. The next section addresses these questions.

Primary and secondary effects

Chapter 3 introduced another of the key questions in the sociology of education, namely the balance between primary and secondary effects in determining educational attainment. Boudon (1974) identified primary effects as those acting directly on attainment and ability; and secondary effects which bear on educational continuation in an indirect sense, through decision-making, affordability and so on. This is an important distinction at postgraduate level because it helps to establish whether social class differences are endogenous or exogenous to the enterprise of higher education. If primary effects are key, in that attainment and other ‘academic’ factors are the principal influence on entry to postgraduate

study, then the process arguably does not exhibit inequality of opportunity.¹⁵⁶ On the other hand, secondary effects can reflect quite different exogenous material and cultural factors meaning students from advantaged backgrounds find themselves in more conducive circumstances for educational progression than their disadvantaged peers.

I found that academic factors are closely associated with progression to postgraduate study. Degree classification obtained shows a particularly clear link, especially for entry to a research degree. Entry to postgraduate study varies considerably by field of study and these factors were also shown to be important intermediaries between social class and progression to postgraduate education. Likewise first-degree institution, arguably a limited proxy for ability, also proved important. Controlling for these factors, the effect of social class on progression to higher degrees diminished considerably, even though it did not disappear entirely (and remained for PGCEs).

In Chapter 6 (Figure 6.6) I posited three models of the relationship between social class, academic attainment and progression to postgraduate study. These models were based on the idea of an ‘origin-education-destination’ (OED) link which is common in the literature. I suggested that Figure 6.6c offered the best fit to the data: social class influences progression to postgraduate study mainly through first-degree attainment, but it retains a small direct effect too. In a challenge to the orthodox view, Goldthorpe and Jackson (2008) argue that the strength of the link between attainment and destination varies by social class origin; here that would mean attainment is more important in securing progression for those from working-class origin. Progressing requires evidence of ability, otherwise it is materially (and psychologically) risky; these concerns do not apply equally to the service-class graduate, although there is still an attainment-destination link

¹⁵⁶ Inequality of *outcome* will remain, which would be considered unfair if the process by which individual differences in ability and attainment arise are themselves classed. The forms of academic judgement, for instance, may be biased in favour of one class or another. However it should be noted that in practice, this kind of biased primary effect is likely to be strongest at the earliest level of the education system.

because a third-class honours (for instance) effectively writes off one's chances of entering research degree study.

A pivotal question is how far institution is an indicator of primary or secondary effects. I raised, in Chapter 7, two plausible explanations for the influence of first-degree institution on entry to postgraduate study, particularly research degrees. On the one hand it was evidence of those who had already obtained social and education advantage (through the status of their alma mater) seeking to enhance that advantage further. On the other it was simply a kind of selection effect: postgraduate study appeals to those who have already self-selected into an 'academic' stream where further study is worthwhile for its own sake and because it leads to employment of a similar nature. Those with an academic disposition can perhaps recognise themselves as one of a 'type', sharing personality traits with others and forming an increasingly homogenous group, exhibiting the kind of 'natural' homophily which Bottero (2005) identifies in many common stratification processes. However this 'type' tends to privilege certain social characteristics over others: it is not gender, class or ethnicity neutral.

The thesis findings partially confirm and certainly extend those of the handful of earlier studies on the subject. They support the main conclusion of my earlier research on the topic (Wakeling, 2003a, 2005a) that social class inequalities are 'carried' by first degree institution, but do so with a far larger and higher quality sample, more robust analysis and with an array of additional findings. Crucially, my findings are quite different to those of Rudd (1975), whose study represents the closest match in terms of design, focus and location to mine. He found working-class students were slightly overrepresented at postgraduate level;¹⁵⁷ my survey of current postgraduates suggested the opposite. My conclusion that social class has little direct impact on immediate progression to postgraduate study once other factors are controlled for mirrors that of Stuart *et al's* (2008)

¹⁵⁷ Rudd believed this was due to a shift to the sciences at postgraduate level where there were more working-class students. See Chapter 3.

smaller study which covered two new universities in south east England. There are comparisons to be made with research conducted in other countries too. Mullen *et al* (2003) found little class effect on entry to masters degrees in the USA, but some for doctorates, whereas my multilevel model showed slightly greater class effects for taught higher degrees.

Having considered the role of primary effects, the next section considers the implications of my findings for two of the most prominent theories in the sociology of education which try to account theoretically for secondary effects. These are cultural capital theory, most associated with the work of Pierre Bourdieu; and relative risk aversion theory, as developed by John Goldthorpe and collaborators.

Cultural capital, relative risk aversion and educational systems

Bourdieu's theory of social reproduction in and through education covers both primary and secondary effects. Primary effects operate through the pedagogic practices of the education system, whereby the familial habitus of children from a dominant class milieu is more highly valued than that of children from more humble backgrounds. This seeks to problematise the ideas of educational attainment, ability and success themselves. However, strong emphasis is also placed on secondary effects through the role of the habitus as a guide to action in both familiar and unfamiliar circumstances. Thus decisions to continue in (or return to) education are quasi-instinctive and likely to impel some and dissuade others depending on their social class. RRA theory is Goldthorpe's application of rational action theory to educational decision-making in the context of overall familial mobility strategies. It explicitly assumes the principal motivation in these decisions is the avoidance of downward mobility. Continuing in education is thus differentially evaluated according

to social class background because of varying levels of economic resource at families' disposal.

Both theories would therefore predict that the secondary effects of class on entry to postgraduate study would disadvantage working-class students. That is, once primary effects (academic factors) are controlled for, continuation to postgraduate study will be outside the socio-cultural 'comfort zone' of working-class graduates (cultural capital theory) or with financial costs and risks outweighing possible benefits (RRA). The classed nature of decision-making will vary across different kinds of postgraduate study (such as the academic or vocational content of the course or between masters and PhD study).

My results do not strongly support either theory. The social class patterns seen across the two datasets are the opposite of what one would expect under RRA. Class differences are smallest at the point of first-degree graduation, when financial vulnerability is greatest and the risk-averse option ought to be to enter graduate employment (and thus avoid downward mobility). Class differences are greater for graduates of longer standing, when one would expect postgraduate study to be less risky (having obtained some financial security). Some information on the financial situation of the graduates and postgraduates was available in my datasets which allowed an investigation of these factors. There seemed to be few social class differences in sources of funding for the postgraduate students which again is contrary to RRA: one would expect there to be fewer students of working-class origin willing to enter postgraduate study without financial support.

Working-class students who do enter postgraduate study may be financially atypical. Data on students' fee liability as undergraduates (a proxy for household income) did not support this contention. However data on postgraduates' student debt, which I believe to be the only such data in existence, showed working-class postgraduates were less likely than more advantaged students to have student debts. This suggests that postgraduate study is a possibility for those who have better financial support *or* who have

planned their finances carefully in prospect of postgraduate study. Further research is required to confirm this impression.

Unlike progression to postgraduate study in general, RRA *does* match the findings in relation to entry to PGCE courses where there were clear social class differences which did not disappear once academic factors were taken into account. Graduates from lower social class backgrounds progressed to PGCE at a greater rate than those from professional/managerial backgrounds. This makes sense if the aim is to avoid downward mobility: for a graduate from Class 1, schoolteaching (a Class 2 occupation) represents downward mobility. For a Class 7 graduate, schoolteaching is a realistic upward mobility destination, being a profession with good conditions, relatively good pay and which is secure (certainly compared with working-class jobs). Smith (2009) shows that schoolteaching has historically been an upward mobility route for the academically-able person of working-class origin.¹⁵⁸ One might also argue, following Zweigenhaft (1993), that working-class students who have survived in the education system and graduated have only the (cultural) capital of their qualifications; they lack economic and social capital. This capital is most highly valued within the education system itself, thus teaching represents a rational choice.

Under both RRA and cultural capital theories, students' motivation for entering postgraduate study should exhibit social class differences. One would expect those from humble backgrounds to report more instrumental motivations for postgraduate study, for instance, either because they were seeking to secure upward mobility or because that would be an appropriate justification for further study, in contrast to the 'dilettantism' of middle-class students identified by Bourdieu and Passeron (1979). In fact the reported motivations of postgraduate students in both datasets showed very little social class difference. The only differences of note were not in the *kind* of motivations cited across

¹⁵⁸ In 1843, at St. Mark's Anglican teacher training college, Chelsea, "only 4 of the 43 students were sons of schoolteachers, 13 were the sons of artisans and tradesmen and three of labourers. Ten others had fathers who were deceased and whose occupations had not been noted" (Smith, 2009, p. 72).

class, but rather the *amount*: students from higher social class backgrounds cited more motivations more frequently. Again, this does not support either theory because one would expect those working-class students entering postgraduate study to be more strongly motivated since to them, so the theories go, postgraduate study must be a purposive choice.

Turning to cultural capital theory specifically, the results of the research do provide some vindication, albeit limited to institutionalised cultural capital. Operationalising cultural capital pragmatically as parental level of education, there was clear evidence in the online survey that postgraduates were likely to have highly-qualified parents. This is a new finding for the UK and supports evidence from Norway and the USA which found a strong association between parents with higher education and postgraduate children (Mastekaasa, 2006; van de Werfhorst and Andersen, 2005). However it should be noted that the comparator used – Labour Force Survey data – is not ideal. A better indication will be available when data about the parental background of undergraduate applicants, collected for the first time via UCAS in 2008/09, is made public.

Perhaps a more powerful example of institutionalised cultural capital is the symbolic capital which attaches to a first-degree from particular universities or types of university. There was very clear evidence in both datasets that the first-degree institution attended was a clear indicator of the likelihood of progressing to postgraduate study. Graduates of pre-1992 universities in general and Russell Group institutions in particular were much more likely to enter postgraduate study than those in post-1992 institutions. I found clear differences in the social class profiles of the different kinds of institution which account for part of the aggregate inequality in rates of progression to postgraduate study by social class.

Turner's (1960) distinction between 'contest' and 'sponsored' mobility is useful in trying to understand the relationship between social class and entry to postgraduate study which this pattern of horizontal stratification by institution reveals. Entry to postgraduate

study might be considered an example of sponsored mobility since it would appear to be available predominantly to pre-1992 university graduates, regardless of social class. There is a strong analogy with the former tripartite system of schooling: entry to grammar school was difficult for children from working-class homes, but once there they tended to fare similarly to their middle-class peers. Achieving similar outcomes having not entered the prestigious track – for instance not attending a ‘prestigious’ university – is not impossible, but it is far less likely. Thus we can infer that the first degree institution adopts a symbolic value as a summative judgement of the qualities of a graduate (“he’s an Oxford man”) which is of questionable justification and legitimacy.

White (2009) distinguishes between ‘weak’ and ‘strong’ meritocracy. Here, weak meritocracy would mean that attainment and aptitude determine who enters postgraduate study but no account is taken of the opportunities individuals have to develop their abilities, how aptitudes and dispositions might come about and so on. Under strong meritocracy, those from different social classes would have an equal opportunity to develop their abilities. My findings suggest weak meritocracy. Even if one were to accept the dubious argument that differences of institutional prestige are wholly legitimate proxies for ability and aptitude for postgraduate study, the process by which such aptitudes are developed introduces social class inequalities. It could be argued that exposure to the research culture characteristic of Russell Group institutions explains their graduates’ propensity to enter postgraduate study; thus any institution-type differences in entry to postgraduate study are legitimate. However this accepts that the process is not endogenous: it is a socialisation effect, not a result of self-selection by those aiming for postgraduate study eventually. Recent research on graduates’ decision-making processes confirms the stratification of graduate outcomes and dispositions by institutional status (Brooks, 2006; Brooks and Everett, 2008).

Whether one could support even weak meritocracy in the case of later progression to postgraduate study is doubtful. The online survey dataset showed a clear shift to social class exclusivity in each surveyed institution in comparison with the first degree cohort. Why the difference? Perhaps this relates to the meaning of postgraduate study for mobility strategies for different classes at different points of the lifecourse. Students may perceive no particular advantage in immediate progression to postgraduate study (once other factors are taken into account); having spent time in employment, advantages could later become apparent. There is a hint of this in the online survey data on the current (own) social class position of part-time postgraduates, who are mostly from Class 2: postgraduate study is here the route to promotion. For the full-time students, the most recent past job for many was in Class 3. Again postgraduate study is a potential aid for upward mobility, but it is one more open to those with a higher social class background.

In summary, RRA and cultural capital theory are useful in explaining certain aspects of the patterns of progression to postgraduate study by social class. Neither though gives a satisfactory account alone; a better explanation is provided by combining concepts from each with other theoretical approaches.

Implications for policy

Since the publication of the Dearing Report (NCIHE, 1997) there has been sustained UK governmental interest in ‘widening participation’ and higher education as a route to social mobility for talented but disadvantaged young people. The Brown government has only recently taken note of the increasing prominence of postgraduate education and the possibility that postgraduate expansion may negate any gains made in widening participation in first degrees. Universities themselves express commitment to the cause of widening participation but should also be concerned with the social composition of their

academic staff: today's PhD students are tomorrow's professors. Just as it is important, for instance, that the House of Commons reflects the diversity of the broader population, so it is of benefit to intellectual life that university teaching and research is carried out by people from a variety of backgrounds with different life experiences. Without such diversity, the production of knowledge is likely to reflect only the concerns and outlooks of a narrow and already privileged group. The research presented here has implications for policy in both these areas.

A policy-maker's first question might be: is there a problem? If social class has little apparent direct effect on the first degree to postgraduate transition, then why worry? As has been pointed out for initial entry to higher education, the most straightforward way to raise participation rates among NS-SEC groups 4 to 7 would be to improve their academic attainment in level 3 qualifications. Similarly, one could argue that attainment is the key to postgraduate transition. However the results in Chapters 6 and 7 show that first-degree institution is paramount, with social class differences disappearing only when this is added as a control. Simply raising attainment at first-degree level, which is measured by degree classification, is therefore unlikely to change the relative progression rates of different social classes substantially. A more appropriate response would be to seek to mitigate the process of institutional stratification ('effectively maintained inequality') whereby there is differential social class recruitment across more and less 'prestigious' institutions. Of course attainment at level 3 is some part of the cause for this differential recruitment, but there remain important social differences in entry to prestigious institutions once students' level 3 performance is held constant, with state-school pupils seemingly reluctant to apply to high-status institutions, despite sufficient grades (The Sutton Trust, 2004; The Sutton Trust and BIS, 2009). Trying to remove institutional status differences by government action is not practical: some of the differences have been encouraged by the state, but their emergence has been mainly organic (based on the

decisions of applicants, employers and so on) and with a degree of endogeneity (through processes of stratification internal to the higher education system). Thus a strategy which attempts to place more high-achieving working-class students in pre-1992 universities would, on the basis of my research, spill over into postgraduate participation. For such universities themselves, a simple and practical first step in widening participation at postgraduate level would be to extend the techniques used for undergraduate recruitment (identification of underrepresented groups and ‘coldspots’, outreach, taster days, mentoring etc) to higher degrees. My discussions with those working in postgraduate recruitment and widening participation offices in UK universities indicate very little awareness of potential inequalities at postgraduate level and virtually no action.

The postgraduate student funding regime *is* within the direct control of government. Postgraduate tuition fees are largely unregulated and as Table 2.2 in Chapter 2 made clear, maintenance funding is scarce and limited to specific kinds of study. A common assumption is that working-class students are discouraged from postgraduate study on financial grounds, particularly since the introduction of tuition fees for first degrees and the replacement of maintenance grants with loans (a situation which has now reversed for those from low-income households). My research does not indicate a clear financial disincentive in pursuing postgraduate study. Paying one’s own fees as an undergraduate did not have much effect on progression to postgraduate study once social class was controlled for. There was some difference in undergraduate fee liability in the online dataset, with an overrepresentation of undergraduate self-payers among the postgraduates compared to undergraduates, but this could well have been an artefactual effect of (say) differential academic attainment. Student debt data showed that large debts do not appear to be a disincentive to postgraduate study; however postgraduates from a working-class background were more likely to have no student debts at all, suggesting they are from financially atypical working-class families or that they have planned carefully and made

financial sacrifices in prospect of further study. Perhaps counter-intuitively then, attending to inequalities in access to postgraduate education is not a simple matter of introducing a more generous funding regime. It may be more important for the decision to take a masters degree, where motivation is likely to be more instrumental and hence more price-sensitive. For research degree study, there is no evidence that recent improvements in stipends have shifted the socio-demographic composition of the research student body; here ‘soft’ aspects of widening participation could profitably be emphasised.

In both these areas (institutional stratification and student funding), the research indicates there is a policy problem to address. It is also evident that further research is needed to more fully understand the situation in these and other areas. I will now suggest the shape which such research could take.

Areas for further research

As indicated in Chapters 4 and 5, there are limitations with the datasets used in this research which a future study could address. Ideally, a study should follow a graduating cohort longitudinally on a prospective basis. The findings suggest that social class inequalities increase over time, with relative equality in immediate transition to postgraduate study giving way to quite marked social class inequalities in later entry. Following a cohort would cut out some of the ‘noise’ which exists in snapshot surveys such as my online dataset because one could be certain that members of the cohort had been subject to the same funding regime and other experiences. Such prospective longitudinal studies are expensive and tracking panel members is tricky. An alternative might be to use an existing cohort study or retrospective panel data. Two potential such sources are the British Cohort Study of 1970 births and HESA’s DLHE Longitudinal Study. The former provides comprehensive data about a representative sample suitable for

determining overall postgraduate participation rates by social class. Although it is perhaps now of mainly historical interest (with panel members entering university from 1988), one could be reasonably content that entry to postgraduate study would have already occurred (i.e. there will be little 'right censorship'). The DLHE Longitudinal Study resurveys first-degree graduates from 2002/03 in 2006, allowing some judgement to be made about the effect of social class on later entry to postgraduate study.

There is a clear need for research into the *process* by which individuals enter or do not enter postgraduate study. Whilst my research has provided a description of patterns of postgraduate participation by social class, questions of process have been addressed largely in a negative sense. That is, the patterns observed can justify the partial rejection of some proposed explanations of the process leading to social class inequalities, but they cannot *positively confirm* explanations. One means of addressing questions of process would be to study postgraduate application data. Becoming a postgraduate student requires application to institutions, evaluation by selectors, rejection or acceptance, meeting of conditions etc. There are thus various stages through which the prospective postgraduate student must pass in order to become a postgraduate and at which inequalities may be manifest. In the absence of a national application system, a study using institutional postgraduate applicant data is apt.

More fundamentally, understanding the decision to enter postgraduate study calls for a qualitative approach, which explores individuals' motivations and reasons for seeking or rejecting a postgraduate qualification. This would allow a direct test of RRA and cultural capital theories in respect of decision-making and would also enable exploration of subject and institution choice, the place of postgraduate study within an individual's educational and occupational careers and in their wider social and familial milieu. Through interview data, for instance, one could examine the *meaning* of postgraduate study to individuals.

These suggested directions for further research essentially extend and augment the research questions pursued in this thesis using better data sources and different methods. There are also some potential new lines of inquiry which emerge from the findings. The first is a re-examination of the effect of gender on progression to postgraduate study. There has been a good deal of research on women's underrepresentation in science, part of which has looked at the PhD. Participation in doctoral studies across the board has received much less attention, despite women being underrepresented at this level cross-nationally (Charles and Bradley, 2002; Gutiérrez Esteban and Wakeling, 2006). There has been virtually nothing written on women's participation in taught higher degrees, perhaps because women are now a numerical majority among masters students. However my multivariate findings suggest women are less likely to proceed immediately to such degrees once other factors are controlled for (and also confirm the position in doctoral studies). This bears further investigation.

Entry to postgraduate teaching qualifications consistently showed social class effects in my results, with an inverse relationship between class and progression to that typically observed in studies of educational inequalities. Further research on entry to the teaching profession and its place in class mobility strategies would be interesting. There are strong hints from existing literature that the teaching profession is a favoured route for mobility for the able working-class child. Smith (2009) shows how Victorian church school teachers were typically from humble backgrounds; Kelsall *et al* (1972) found a strong working-class intake to postgraduate teacher training in the 1960s; and Zweigenhaft (1993) showed the predilection of state school Harvard graduates for educational careers; Devine (2004) contrasted teachers with doctors in her study of social mobility strategies in Britain and America. A more thorough investigation of existing data, together with analysis of GTTR applicant data is called for. With more detailed data, it would also be

interesting to investigate the class composition of other major non-degree postgraduate courses (such as the law conversion course).

Finally, as I have suggested elsewhere (Wakeling, 2009b), there is strong potential for comparative study of postgraduate participation rates. Postgraduate education has grown cross-nationally, yet it does not take the same form in all countries. I have used postgraduate education in the UK as a test for persistent inequality and associated ideas; a comparative study would extend this to other countries and identify whether the patterns seen in the UK hold elsewhere in the presence of different institutional configurations and national policies. The alignment of European systems of higher education introduced through the Bologna Process, which includes a regularisation of postgraduate studies, makes such a comparative study particularly opportune. Another enticing comparative study would involve treating the changes to student funding regimes across the UK nations and the Republic of Ireland as a natural experiment for the effect of tuition fees on postgraduate participation. All five countries have introduced and amended tuition fees in different ways in the last decade or so and have sufficient similarities to make such a comparison interesting and illuminating.

Conclusions and final remarks

In this thesis I have shown that social class inequalities in higher education (specifically postgraduate education) have important consequences. They show the limits which continue to be placed on educational opportunity by social class background, echoing themes in the broader literature on education and social reproduction and mobility. I have generated substantial new evidence about patterns of postgraduate participation by social class which challenge the findings of the only previous major study of UK postgraduates (Rudd, 1975). I have extended the debate on ‘persistent inequality’ by showing that class

inequalities extend to postgraduate level. Class inequalities are certainly *effectively* maintained through patterns of institutional stratification. Whether they are *maximally* maintained is a moot point, although they certainly seem to increase for later entry to postgraduate study. Still, the patterns observed also indicate that, on the whole, background effects decline and that in the immediate transition to postgraduate study there is an element of ‘weak’ meritocracy. Thus my research generally confirms that patterns of educational inequality observed in large-scale cross-national research extend to postgraduate education in the UK. The patterns seen in my datasets are not entirely identical to those found in previous studies though and there is a suggestion that Turner’s (1960) concept of ‘sponsored mobility’ provides an additional descriptive resource. Turning to why these patterns arise, I found that the two main theories in the sociology of education - RRA and cultural capital theory – were only partially successful in accounting for social class differences in access to postgraduate education, particularly in relation to ‘secondary effects’.

In reviewing my results and conclusions, I am aware that they may have been coloured by three factors. The first is my own personal experience in missing out on PhD study immediately after graduating from my first degree due to lack of funding, an experience which spurred my interest in access to postgraduate study in the first place. My finding that there was only a small direct effect of social class on immediate progression to postgraduate study was a surprise and contrary to my expectations – but of course that is the point of doing empirical research. The second factor is the tendency for sociologists to accentuate the negative: the sociologist’s role is of course to critically investigate society, but this sometimes seems to mean that sociologists downplay reductions in inequality and find the bad news in every story. I stand by my conclusion that there are underlying inequalities hidden by the ‘weak’ meritocratic outcome. At the same time, whilst there are

perhaps not grounds to celebrate, there are reasons to be cheerful: access to postgraduate education is *not* simply a matter of social class.

A third factor which could affect my conclusions is an inflated sense of the importance of postgraduate study. I have worked and studied in higher education for seventeen years; this thesis is written for what will be my third higher degree; postgraduate study is clearly something which matters to me. For others it will be an irrelevance. Moreover even if the credential inflation thesis is correct, there are likely to be natural limits to the growth of postgraduate study. It is difficult to foresee the doctorate for instance ever being more than a minority pursuit, simply because it is so esoteric and extends education so far into adulthood. In addition, postgraduate education is likely to follow what economists call a ‘concave utility’ – or what is commonly known as the law of diminishing returns. Outside of the education system, each additional higher degree generates smaller and smaller increases in labour market advantage (and might even reduce it after a point).

From a sociological account which focuses on processes of social stratification, reproduction and mobility, one might be left with the impression that higher education’s value is *arbitrary*. That is, the knowledge and skills which underpin university education and which are certified in degrees are valuable only as a positional good; their worth is not intrinsic (or even utilitarian) but instead arises from their use as signifiers in the competition for social position. This is the classic Bourdieusian stance of *Distinction* and *Reproduction* (Bourdieu, 1984; Bourdieu and Passeron, 1979) and perhaps also that of Collins (1979) in his denial of the technocratic explanation of educational expansion. Following Beck (2007) and Moore (2004)¹⁵⁹ I reject a deterministic position whereby the cultural objects and pedagogic actions of the university are solely the product of a strategy of dominant class reproduction. Undeniably these things *do* lend advantage to the already

¹⁵⁹ And also later Bourdieu in his shift from relativism to universalism (see Gartman, 2007).

privileged, but that does not annul the intrinsic value of the university's role as custodian of knowledge and culture and its centrality to civilisation and the 'good society', nor indeed its more prosaic task of educating the professional workforce. That is why access to university education matters in the first place: these goods should be available to all those able and willing to make use of them, regardless of the lottery of birth. For those of us who work in, study in or simply care about higher education, this remains the challenge.

Appendix 1: Description of HESA data

This appendix provides further detail about the data provided by HESA, including definitions of the population(s) and the specific fields used; the means by which the datasets were linked together; and how derived variables were coded. The appendix also sets out HESA's Data Protection requirements for rounding cell counts, reports patterns of missingness in the HESA datasets and acknowledges the source of funding for procurement of the data.

Overview of the datasets

The data obtained from HESA derives from two sources: the HESA Student Record and the First Destinations Survey/Destination of Leavers from Higher Education survey. Full details of these two datasets are available from HESA's website (www.hesa.ac.uk), including a comprehensive coding manual for each source for each year. Words in Courier font below refer to field names in the HESA record. Student record fields are prefixed with S and destinations record with D. HESA data is collected from institutions according to a pre-defined template and submission of the data is part of publicly-funded institutions' statutory obligations under their funding contract with the relevant national funding councils. Various quality and consistency checks are performed on the data. Institutions are subject to audit on their returns, with the possibility of financial sanction where there are errors or discrepancies.

The HESA Student Record is based on counts of 'years of programme of study' for students studying in higher education, which is defined as any programme above level 3 of the National Qualifications Framework. A single person may be counted more than once if they are studying two or more qualifications concurrently.¹⁶⁰ The HESA registration year runs from 1 August to 31 July. For instance the academic year 2004/05 covered 1 August 2004 to 31 July 2005.

For 2004/05 only, data for London Metropolitan University (S002INSTID = 0202) was not released in individual form at the institution's request.

The postgraduate student dataset used in this study comprises any student:

- with a 'qualification aim' at postgraduate level (S041QUALAIM <=14)
- who was ordinarily resident in the UK (S012DOMICILE >=2826)
- and either actively studying or writing up (S070MODE <=44)
- in the academic years 2001/02, 2002/03, 2003/04 or 2004/05.

Destinations data is derived from two sources. For 2001/02, it is taken from the First Destinations Survey (FDS) for that year. From 2002/03, the FDS was replaced by the Destination of Leavers from Higher Education survey (DLHE), with some changes in the data collected. The survey populations cover all those students who successfully completed a qualification in the standard HESA reporting period (1 August to 31 July). The FDS targeted full-time students only, whereas DLHE includes both full- and part-time students.

¹⁶⁰ My own experience provides an example: I am registered as a PhD student and on a Postgraduate Certificate in Academic Practice at the same time. These are two separate qualifications, at different institutions, and hence I should represent two 'years of programme of study' in the HESA Student Record for 2008/09.

The destinations dataset provided comprises:

- students who successfully obtained a first-degree ($S037QUAL1 \geq 19$ and ≤ 23)
- on the basis of full-time study ($S070MODE = 01$ or 02 or 23 or 24 or 25)
- who were ordinarily resident in the UK ($S012DOMICILE \geq 2826$)
- in the academic years 2001/02, 2002/03, 2003/04 and 2004/05

Respondents to the FDS and DLHE were asked to indicate their activity on a set reference date:

- For 2001/02: 3 January 2003
- For 2002/03: 15 January 2004
- For 2003/04: 15 April 2004 (for qualifications obtained before 1 January 2004) or 14 January 2005
- For 2004/05: 15 April 2005 (for qualifications obtained before 1 January 2005) or 16 January 2005

Where a student is not able to respond in person, proxy reporting (e.g. from a parent) may be used.

The destinations dataset contains data from both the Student Record and FDS/DLHE. Records were linked by unique matches on the fields $D004HUSID$ and $S004HUSID$.

Variables

Table A1.1 below gives details of the main variables used in the thesis and their associated fields in HESA records. Details of the derivation of social class are provided in Appendix 6. Coding of the 'destination' variable is discussed in Chapter 7 (see Table 7.1).¹⁶¹

Variables which were provided as part of the datasets but which are not used in the thesis are not described here.

¹⁶¹ Identification of those progressing to a PGCE was based on a student in the FDS or DLHE population reporting study activity at the level of Diploma or Certificate ($D036TYPEQUAL = 03$) where the 'professional subject of training' ($D034PROFSOCT$) was one of the following Standard Occupational Classifications:

23140 Secondary Education Teaching Professionals
23141 Secondary Head Teachers
23142 Secondary Teachers
23150 Primary and Nursery Education Teaching Professionals
23151 Primary Head Teachers
23152 Primary Teachers
23160 Special Needs Education Teaching Professionals
23190 Teaching Professionals not elsewhere classified
23191 Music, Dance and Drama Teachers (Private/Pedagogical)

Table A1.1: Description of main variables

Variable	Relevant HESA field(s)	Description/notes
Age	S010BIRTHDTE	Age calculated from student's date of birth as at 31 August (postgraduate students dataset) or 31 July (destinations dataset)
Gender	S011GENDER	
Institution	S002INSTID D002INSTID	Derived variable created to group institutions by 'mission'. Categorisation as 'post-1992' university based on institution's status in 2002. See Chapter 6, footnote 111.
Mode of study	S070MODE	The detailed HESA categories have been collapsed into full-time and part-time only
Major source of tuition fee	S068MSTUFEE	For those in the destinations dataset this gave the major source of funding for the <i>first-degree</i> tuition fee. For those in the postgraduate student dataset it is the source of funding for the tuition fee on the current course.
Qualification aim	S041QUALAIM D036TYPEQUAL	In the postgraduate student dataset, this records the qualification for which the student is aiming at a detailed level. This has been recoded into a smaller number of categories. In the destinations dataset, the field has a much smaller number of values.
Degree classification obtained	S039CLASS	Degree classification obtained for first degree. This field is only available in the destinations dataset. Values 05 – 11 have been coded as 'Third class honours/pass'
Reason for taking another course	D037SECINT1 D038SECINT2 D039SECINT3 D040SECINT4 D041SECINT5 D042SECINT6 D043SECINT7 D044SECINT8	Only applies to those in the destinations dataset who have a destination including further study. Each variable refers to a response to the question: 'Why did you decide to undertake further study, training or research?' The responses listed are: <ul style="list-style-type: none"> • Because it was a requirement of my employment • To develop a broader or more specialist range of skills or knowledge • To change or improve my career options" • Because I was interested in the content of the course • Because I had enjoyed my first course and wanted to continue studying • I wanted to go on being a student/I wanted to postpone job hunting • I had been unable to find a suitable job
Type of secondary school attended	S169PREVINST	Previous institution attended, based on information provided for students applying via UCAS. Only included in the destinations dataset.
Subject of study	S101SBJ01 S102SBJPER01 etc.	Subject of study of qualification aim (postgraduate student dataset) or qualification obtained (destinations dataset). Coded using the JACS classification for 2002/03 – 2004/05 and the HESACODE classification for 2001/02. HESACODE subjects have been mapped to JACS using HESA's published guidance

Subject splits and weighting

Students in higher education often study more than one subject concurrently within the same qualification. For instance, a student on a joint honours degree in English and Politics is likely to be studying for half of their time in each subject. Any analysis which wants to compare arts and humanities students with those taking social science is faced with a problem when it comes to such courses. HESA employs a convention for dealing with all such students which involves splitting students between the subjects. They describe this as follows:

Under apportionment, each headcount is, where necessary, divided in a way that in broad-brush terms reflects the pattern of a split programme. This is analogous to the use of FTE calculations, but should not be confused with them, since the splits used for apportionment are conventional rather than data-based.

The 19 broad subject areas are disaggregated into 159 Principal subjects. Similarly to above, the following rules are used to determine the principal subject:

For split programmes not involving an initial teacher training (ITT) component, the apportionment algorithm is as follows:

- 50%:50% for a balanced two-way split;
- 66.667%:33.333% for a major/minor two-way split;
- 33.333%:33.333%:33.333% for a balanced three-way split.

ITT students at undergraduate level who also have a specialism subject recorded (typically, secondary ITT students) are apportioned 50% to the 'Education' subject area and the remaining 50% is further apportioned according to the algorithm for non-ITT students. Where no subject other than education is recorded, or where the student is on a PGCE course, apportionment is 100% to the 'Education' subject area.

(from documentation supplied by HESA for supply of data, schedule 23693)

Any analysis involving subject of study which is reported in the thesis uses these weights. Where further weights are applied (e.g. to deal with nonresponse), these were multiplied by the subject weighting.

HESA's rounding strategy

HESA describes its rounding strategy as set out below. This has been complied with in any statistics reported in the thesis.

Due to the provisions of the Data Protection Act 1998 and the Human Rights Act 1998, HESA implements a strategy in published and released tabulations designed to prevent the disclosure of personal information about any individual. These tabulations are derived from the HESA non-statutory populations and may differ slightly from those published by related statutory bodies. This strategy involves rounding all numbers to the nearest 5. A summary of this strategy is as follows:

- 0, 1, 2 are rounded to 0
- All other numbers are rounded to the nearest 5

So for example 3 is represented as 5, 22 is represented as 20, 3286 is represented as 3285 while 0, 20, 55, 3510 remain unchanged.

This rounding strategy is also applied to total figures; the consequence of which is that the sum of numbers in each row or column will rarely match the total shown precisely. Note that subject level data calculated by apportionment will also be rounded in accordance with this strategy.

Average values, proportions and FTE values prepared by HESA will not be affected by the above strategy, and will be calculated on precise raw numbers. However, percentages calculated on populations which contain 52 or fewer individuals will be suppressed and represented as '!' as will averages based on populations of 7 or less.

(from documentation supplied by HESA for supply of data, schedule 23693)

Missingness patterns in the datasets

Table A1.2 sets out patterns of missingness (item nonresponse) in the HESA datasets. It does not cover nonresponse to the FDS or DLHE, which is described in Chapter 5.

Table A1.2: Patterns of missingness in the HESA datasets

Variable	Missing values	Pattern
<i>Postgraduate student dataset</i>		
Age	0.6%	Missing none: 89.1%
Major source of tuition fee	3.1%	Missing 1: 10.2%
Qualification on entry	8.1%	Missing 2 or more: 0.07%
<i>Destinations dataset</i>		
Age	0.1%	Missing none: 53.9%
Secondary school type	23.8%	Missing 1: 30.4%
Social class	38.8%	Missing 2 or more: 15.7%

Procurement of HESA datasets

HESA charges for data provided to academic researchers. A substantial discount is offered on the price quoted for commercial customers. The cost of purchase was met from a small research grant provided by the Higher Education Academy Centre for Sociology, Anthropology and Politics under their Postgraduate Project Funding scheme for 2005/06 (ref. PG05-13) and from a small grant made by the Political Studies Association. Research for these projects was undertaken jointly with Jerry Johnson of the University of Manchester and has been reported separately (Wakeling and Johnson, 2006).

Appendix 2 – Online survey instrument (questionnaire)

This appendix reproduces in hard copy format a ‘generic’ version of the on-line questionnaire used in the survey of postgraduate students. The survey differed slightly across all nine participating institutions, but reproducing each one separately would take up over 100 pages. A note of the differences between versions is given in Table A2.1.

Table A2.1: Survey characteristics at each participating institution

Institution	Non-UK-domiciled filter?	Number of institution-specific questions
Otherford University	×	0
Dibley City University	×	1
Waterworth College	✓	0
Damethorpe University	×	0
University of Tipton	×	0
University of Ravingham	✓	0
University of Central Albion	×	0
University of Riverby	×	5
University of Gusset	×	5

Each question in a typical on-line survey must conform to one of a limited number of types which are constrained by the available formats within HTML forms. These were pre-defined in the WebSurveyor software. The format for most of the questions was closed, leaving a choice between a drop-down list (one response allowed only); radio buttons (displaying all possible answers and allowing only one to be selected); and tick boxes (displaying all possible answers and allowing many to be selected). The selection of question-type and layout was based on the advice in Couper (2000) and Dillman (2007). On-line surveys offered me an advantage over paper-based methods because it is not possible to constrain respondents to a single response category on paper. For some other questions, open text responses were permitted, with the size of the response box intended as a non-verbal cue to the respondent on the desired length of response. Open responses were used where the range of possible answers would be too large to accommodate in a drop-down list – for instance the institution that the respondent had attended for their first degree, for which there are at least two-hundred possible answers within the UK alone. Such questions were coded *post hoc*, where possible using an existing coding schema (for example HESA’s ‘JACS’ system of standardised subject categories). Where applicable, respondents were given an opportunity to select ‘Other’ as a response category and provide further clarification of their response. These answers were also coded *post hoc*.

On-line surveys also offer advantages in how the look-and-feel of the survey can be employed to help the respondent move between questions using visual cues. Colour and textual emphasis (e.g. emboldening and italicising) were used here, such as putting a coloured number at the start of each question, with the question words in bold text and explanatory text in normal italics. Questionnaires were adapted to reflect the HTML style (font, colours, logos etc) used at participating institutions to ‘brand’ the survey (on the assumption that this would assist in boosting response in contrast to a visually ‘anonymous’ survey). The questionnaire was broken up into ‘pages’, as opposed to creating one long list of questions, to aid the respondent in navigating around the screen

and heading styles were used to similar effect. Without introducing at least some ‘page breaks’ into the survey it would also have been impossible to introduce routing features or conditional questions.

Although the survey software offered the potential for validation of responses on-the-fly it was decided not to implement this, with two exceptions. This decision was essentially a trade-off between item nonresponse and validity on the one hand and overall response rate on the other: introducing item validation would prevent respondents skipping an item, but it could also lead to abandonment of the survey if the respondent is unable to work out what kind of answer is required. The only validation employed was to ensure that the year of award entered for a prior higher education qualification was an integer in the range 1920 to 2007 (or else blank). A pop up dialogue box appeared to this effect if the respondent entered an invalid response and the survey would not move to the next page until a valid entry was made. Similarly, respondents were constrained to entering a number between zero and fifteen for dependent children (or making no response).¹⁶² Conditional routing – where respondents see some questions only if they give specified answers to earlier questions – was sparingly used too. It was used to filter out postgraduates who were not UK-domiciled where this could not be achieved via the sampling frame; to ask a question about previous employment only to those who were working before taking up postgraduate study; and to ask additional, institution-specific questions of research students only for one of the surveys.¹⁶³

There follows a reproduction of the survey information web page, hosted on the Cathie Marsh Centre for Census and Survey Research website (<http://www.ccsr.ac.uk>) and the questionnaire itself. As HTML is designed for viewing using a display screen rather than in printed format, this will not be a perfect rendition of what a respondent would see on-screen.

¹⁶² The highest number actually entered was seven.

¹⁶³ Some of the participating institutions were offered the opportunity to add a limited number of their own questions at the end of the survey as an inducement to take part. Only two institutions took up this offer.

**SURVEY OF POSTGRADUATE STUDENTS
INFORMATION FOR RESPONDENTS**

Background

Recently there has been much attention on "widening participation" in higher education, with a particular focus on increasing the number of students from less advantaged socio-economic groups. However widening participation in postgraduate study has received much less attention and has been a somewhat under-researched area. This is perhaps surprising given recent rapid growth in postgraduate student numbers and the increased importance of postgraduate activity to universities. In contrast to the position with undergraduate study, very little is known about the socio-economic background of postgraduates, especially characteristics such as social class, level of parental education and type of secondary school attended.

A recent analysis of postgraduate study by the Higher Education Policy Institute ([Sastry, 2004](#)) pointed out this gap in research, as did a review of existing research on widening participation for the Higher Education Funding Council for England ([Gorard et al, 2006](#)).

One reason for this lack of research is a shortage of appropriate data: most of the required information is not collected by universities, nor is it available via the UCAS admissions service who only process applications to study for particular sorts of postgraduate courses (teaching, social work and nursing). This survey is designed to address the lack of research by collecting data directly from postgraduate students about their educational and family backgrounds.

**Background
Why the survey is important**

The survey seeks to answer a number of questions relating to postgraduate study. Among these are:

- What is the socio-economic background of postgraduate students and how does this differ from undergraduate study?
- Do postgraduate students have parents with postgraduate qualifications?
- Where did postgraduate students complete their undergraduate studies?
- How do postgraduates' background characteristics vary between subjects and institutions?
- Are the factors affecting access to postgraduate study the same or different to those for undergraduate study?

**Background
Survey details**

The survey is intended for completion by current postgraduate students who are actively studying at higher education institutions in the UK and are ordinarily resident in the UK. A number of universities and colleges

are taking part in the research.

The survey, which is web-based, collects information on postgraduate students' parental occupational background, parental education, secondary school type attended, details of their current course (including funding) and their previous educational background and qualifications. Additional questions of interest to participating institutions have been included in some instances.

Survey outcomes

The survey results will be communicated to the universities and colleges taking part in the research, to agencies with a responsibility or interest in the issues under investigation and to any respondents who have indicated an interest. It is likely that the results will form the basis for scholarly publications and presentations.

Frequently Asked Questions

(If you have a question which is not answered below, please email Paul.Wakeling@postgrad.manchester.ac.uk)

- [Who is running and administering the survey?](#)
- [Which institutions are participating?](#)
- [Why is the survey needed?](#)
- [Who is supporting the survey?](#)
- [Why is the survey being run on-line?](#)
- [Does the survey have ethical clearance?](#)
- [How will you ensure data protection compliance?](#)

Who will be running and administering the survey?

The survey is run and administered from the School of Social Sciences at the University of Manchester. The main contact for the survey is Paul Wakeling.

Which institutions are participating?

A balance of different types of institution is taking part, covering England and Wales.

Why is a survey needed?

Most institutions do not collect information on the socio- economic background of their postgraduate students. As a result, it is not possible to use data from existing sources (like the Higher Education Statistics Agency).

Furthermore, it is not possible to use alternative socio- economic measures, such as the 'postcode' measures sometimes employed. This

is because of uncertainty about the accuracy of the home address supplied by postgraduate students. It is not possible, from existing data, to determine whether this address is the parental home, the student's own home or a 'term-time' address. For these reasons it is necessary to run a survey to collect the required data.

Who is supporting the survey?

The research is funded by the Economic & Social Research Council. The survey has been formally endorsed by:

- [National Postgraduate Committee.](#)
- [Office for Fair Access](#)
- [Research Councils UK](#)
- [UK Council for Graduate Education](#)

Why is the survey being run on-line?

An on-line survey is being used to maximise the number of respondents who can be contacted as part of the research and to minimise cost. Since the survey will project's resources are limited, distributing a paper questionnaire and entering responses into a database would be too costly and time-consuming. Many people find completing a survey on-line quicker and easier than a postal survey.

Does the survey have ethical clearance?

The survey has been vetted for ethical compliance under the University of Manchester's ethical clearance procedures for research projects. This includes consideration of Data Protection and Freedom of Information compliance.

How will you ensure data protection compliance?

The survey method has been designed to ensure separation between students' personal details (such as name and address) and their survey responses when undertaking analysis of results. This will protect the anonymity of respondents and will also prevent institutions from seeing the individual survey responses from their students.

References

[Sastry, T. \(2004\) Postgraduate Education in the United Kingdom. HEPI, Oxford.](#)

[Gorard, S., Smith, E., May, H., Thomas, L., Adnett, N. and K. Slack \(2006\) Review of Widening Participation Research: addressing the barriers to participation in Higher Education. HEFCE, Bristol](#)

[Top of the page](#)

[INSTITUTION LOGO – repeated at the top of each page¹⁶⁴]

Survey of postgraduate students

Study of the background of UK postgraduates

Postgraduate students at the [institution name] are invited to take part in this national project investigating the background characteristics of current postgraduate students. Its intention is to learn more about the kind of people who take postgraduate qualifications to inform policy on widening participation at postgraduate level in the UK.

We will ask you a number of questions about your current and previous studies and your background circumstances. Completing the questionnaire should take only about 15 minutes. Please try to answer as many questions as you can as each is very important in helping us understand more about postgraduate students.

The study, based at the University of Manchester, is sponsored by the Economic and Social Research Council and has the backing of the National Postgraduate Committee, Research Councils UK, the Office for Fair Access and the UK Council for Graduate Education. Further information about the project is available by clicking [here](#).

The research has been approved under the University of Manchester's ethics procedures. Your participation is entirely voluntary. Your answers are completely confidential and will be released only as summaries in which no individual's answers can be identified. No individual information will be shared with [institution name] or other third party. All data will be processed in accordance with the Data Protection Act 1998.

As a postgraduate we hope you will find participation in the survey interesting and we will provide you with information about the survey's results at a later stage if you indicate that you are interested. By continuing with submission of the survey you confirm that you understand this information and that you agree to take part.

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¹⁶⁴ At their own request, the look-and-feel of the survey at the University of Central Albion was based on that of the University of Manchester instead, as the 'host' institution for the research.

Survey of postgraduate students

A. In which country did you live before beginning to study at [institution name]?

- United Kingdom (inc. Channel Islands and Isle of Man)
- Another country

B. What is your nationality?

(if you have dual nationality which includes UK citizenship, please answer 'British')

- British
- Another nationality

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Survey of postgraduate students

ABOUT YOUR CURRENT COURSE

1. Which of these award titles best describes your current programme of study?
(please select one of the following options)

- PhD or DPhil
- Taught doctorate (e.g. DEng, EdD)
- MPhil
- MA/MSc by research
- Taught masters (e.g. MA, MSc, MBA, MEd, MRes)
- Diploma
- PGCE
- Other certificate
- Other (please specify)

If you selected other, please specify:

2. Please tell us your main subject(s) of study
(type in the box below)

3. Why did you decide to begin your current programme?
(please select all that apply)

- Because it was a requirement of my employment
- To develop a broader or more specialist range of skills or knowledge
- To change or improve my career options
- Because I was interested in the content of the course
- Because I had enjoyed my first course and wanted to continue studying
- I wanted to go on being a student/I wanted to postpone job hunting
- I had been unable to find a suitable job
- Other (please specify)

If you selected other, please specify:

4. Are you studying

Full-time? Part-time?

5. In what year did you begin your programme?

(please select one year from the drop-down box below)

6. Please tell us about the source of your funding for the current academic year

(please tick all boxes that apply to your circumstances)

	Tuition fees	Maintenance/living costs
Self funded	<input type="checkbox"/>	<input type="checkbox"/>
Family (including partner)	<input type="checkbox"/>	<input type="checkbox"/>
Your Employer	<input type="checkbox"/>	<input type="checkbox"/>
[institution name] scholarship	<input type="checkbox"/>	<input type="checkbox"/>
UK Research Council	<input type="checkbox"/>	<input type="checkbox"/>
UK Charity	<input type="checkbox"/>	<input type="checkbox"/>
Public Body or UK Government Dept.	<input type="checkbox"/>	<input type="checkbox"/>
UK Company	<input type="checkbox"/>	<input type="checkbox"/>
Career Development Loan	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>

7. What was your main activity immediately before you started your current programme?
(please select one)

- I was studying
- I was in paid employment
- I was looking after the home
- I was unemployed
- I had retired
- I was unable to work through illness
- I took a gap year or time off
- Other (please specify)

If you selected other, please specify:

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Survey of postgraduate students

ABOUT YOUR PREVIOUS EDUCATION

8. What type of secondary school did you attend at age 15?

(if you left school before the age of 15, please select your last secondary school)

- Comprehensive school
- State-run Grammar school
- Independent or Private school
- Grant-maintained school
- Single-faith school (e.g. Roman Catholic, Anglican, Jewish, Islamic, etc.)
- Secondary modern school
- City Technology College
- Overseas school
- Don't know
- Other (please specify)

If you selected other, please specify:

9. What was your highest qualification prior to entering higher education FOR THE FIRST TIME?

If you selected other, please specify:

10. Please give us details of your UNDERGRADUATE degree.

(An undergraduate degree is also sometimes known as a 'first degree' and typically leads to the award such as BA, BSc, BEng etc, or in Scotland MA, MSc etc. Please list the institution you attended rather than the institution which awarded the qualification)

Year awarded	<input type="text"/>
Institution attended	<input type="text"/>
Award title (e.g. BA, BSc, DipHE etc)	<input type="text"/>
Subject	<input type="text"/>
Classification (e.g. 2.1, third etc)	<input type="text"/>

11. During your undergraduate studies, what was the source of funding for your tuition fees?

I started undergraduate study before the introductions of fees in 1998

Full fee remission
(fees paid by LEA/Student Loans Company/Student Awards Agency for Scotland etc.)

Partial fee remission
(some of the fees paid by LEA/Student Loans Company/Student Awards Agency for Scotland etc.)

I or my family paid all fees

I did not undertake undergraduate studies in the UK

Other (please specify)

If you selected other, please specify:

12. What is your total outstanding student debt?

(in calculating your debt, please include student loans, bank overdrafts, credit card debts and personal loans if accumulated while studying. Please exclude mortgage debt)

13. Please give us details of your most recently completed POSTGRADUATE qualification.

(A postgraduate qualification is one usually taken after a 'first degree'. Please do not tell us about your current course here. If you do not have a postgraduate qualification, please indicate this by ticking the box indicated)

Year awarded

Institution attended

Award title (e.g. MA, MSc, PGDip, PhD etc)

Subject

tick here if you do not have a postgraduate qualification

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Survey of postgraduate students

ABOUT YOU

We would like to ask a few questions about you. Your answers are completely confidential.

14. What was your age in years at your last birthday?

 years

15. Are you male or female?

Male Female

16. Thinking about the point just before you FIRST began studying as an UNDERGRADUATE, in which UK region did you live?

(Please select one option from the list below. If you did not undertake undergraduate study, please list the region you lived in at age 18)

17. What is your ethnic group?

(please select one group from the list below)

18. What is your nationality?

(please enter below)

19. What is your marital status?

- Single
 Civil Partnership
 Co-habiting
 Separated
 Married
 Divorced
 Widowed

20. Dependent children are your own children who live with you or other children who live with you as if you were their parent.

How many dependent children do you have?

dependent child/ren

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Survey of postgraduate students

ABOUT YOUR BACKGROUND CIRCUMSTANCES

The following six questions ask for information about your parent(s) and/or guardian(s). There are of course many different family arrangements, so please fill in these questions as appropriate to your circumstances.

21. What is the HIGHEST educational qualification obtained by your MOTHER/FEMALE GUARDIAN?

22. What is the HIGHEST educational qualification obtained by your FATHER/MALE GUARDIAN?

23. Which of the following best describes the current employment situation of your MOTHER/FEMALE GUARDIAN?

(if RETIRED, please give her situation immediately before she retired)

If you selected other, please specify:

24. Which of the following best describes the current employment situation of your FATHER/MALE GUARDIAN?

(if RETIRED, please give his situation immediately before he retired)

If you selected other, please specify:

25. Please select the appropriate category to show which best describes the MAIN occupation of your MOTHER/FEMALE GUARDIAN. If she is not working now, please tick the box to show her LAST main occupation

(please use the 'additional comments' field at the end if you wish to clarify your response)

- Traditional professional occupations**
(such as university lecturer, accountant, solicitor, medical practitioner, scientist, civil/mechanical engineer)
- Senior managers or administrators**
(usually responsible for planning, organising and co-ordinating work and for finance; such as finance manager, chief executive)
- Modern professional occupations**
(such as teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police sergeant or above, software designer)
- Middle or junior managers**
(such as office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)
- Clerical and intermediate occupations**
(such as secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxilliary, nursery nurse)
- Technical and craft occupations**
(such as motor mechanic, fitter, inspector, plumber, printer, tool maker, electrician, gardener, train driver)
- Semi-routine manual and service occupations**
(such as postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)
- Routine manual and service occupations**
(such as HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)
- Never worked**
- Don't know**
- Not applicable**

Additional comments:

26. Please select the appropriate category to show which best describes the MAIN occupation of your FATHER/MALE GUARDIAN. If he is not working now, please tick the box to show his LAST main occupation



Traditional professional occupations

(such as university lecturer, accountant, solicitor, medical practitioner, scientist, civil/mechanical engineer)



Senior managers or administrators

(usually responsible for planning, organising and co-ordinating work and for finance; such as finance manager, chief executive)



Modern professional occupations

(such as teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police sergeant or above, software designer)



Middle or junior managers

(such as office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)



Clerical and intermediate occupations

(such as secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxilliary, nursery nurse)



Technical and craft occupations

(such as motor mechanic, fitter, inspector, plumber, printer, tool maker, electrician, gardener, train driver)



Semi-routine manual and service occupations

(such as postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)



Routine manual and service occupations

(such as HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)



Never worked



Don't know



Not applicable

Additional comments:

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Survey of postgraduate students

ABOUT EMPLOYMENT

27. You indicated above that prior to starting your current course you were in paid employment. Which of the following categories best describes your job IMMEDIATELY PRIOR TO STARTING YOUR CURRENT COURSE?

- Traditional professional occupations
(such as university lecturer, accountant, solicitor, medical practitioner, scientist, civil/mechanical engineer)
- Senior managers or administrators
(usually responsible for planning, organising and co-ordinating work and for finance; such as finance manager, chief executive)
- Modern professional occupations
(such as teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police sergeant or above, software designer)
- Middle or junior managers
(such as office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)
- Clerical and intermediate occupations
(such as secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxilliary, nursery nurse)
- Technical and craft occupations
(such as motor mechanic, fitter, inspector, plumber, printer, tool maker, electrician, gardener, train driver)
- Semi-routine manual and service occupations
(such as postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)
- Routine manual and service occupations
(such as HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)
- Don't know
- Not applicable

Additional comments:

28. Which of the following categories best describes your CURRENT employment status?

- Not working in paid employment
- Working part-time in paid employment
- Working full-time (i.e. 35 hours per week or more) in paid employment

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Survey of postgraduate students

29. Which of the following categories best describes your CURRENT job?

(please use the 'additional comments' field at the end if you wish to clarify your response)



Traditional professional occupations

(such as university lecturer, accountant, solicitor, medical practitioner, scientist, civil/mechanical engineer)



Senior managers or administrators

(usually responsible for planning, organising and co-ordinating work and for finance; such as finance manager, chief executive)



Modern professional occupations

(such as teacher, nurse, physiotherapist, social worker, welfare officer, artist, musician, police sergeant or above, software designer)



Middle or junior managers

(such as office manager, retail manager, bank manager, restaurant manager, warehouse manager, publican)



Clerical and intermediate occupations

(such as secretary, personal assistant, clerical worker, office clerk, call centre agent, nursing auxilliary, nursery nurse)



Technical and craft occupations

(such as motor mechanic, fitter, inspector, plumber, printer, tool maker, electrician, gardener, train driver)



Semi-routine manual and service occupations

(such as postal worker, machine operative, security guard, caretaker, farm worker, catering assistant, receptionist, sales assistant)



Routine manual and service occupations

(such as HGV driver, van driver, cleaner, porter, packer, sewing machinist, messenger, labourer, waiter/waitress, bar staff)



Don't know



Not applicable

Additional comments:

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Survey of postgraduate students

FEEDBACK AND INTERVIEWS

30. If you would like to receive a brief summary of the findings of the survey once complete, please indicate this by ticking the box below.

Please email me brief details of the survey results when available

31. Once the survey phase of the research is complete, we may wish to interview a selection of respondents to discuss their educational careers in more detail. If you would be willing to be interviewed as part of this project, please indicate this by ticking the box below.

(please note that in order to ensure a broad range of responses we will use the answers given to questions in the survey to help select interviewees)

I would be willing to be interviewed

32. If you have indicated that you would like to receive brief results of the survey and/or that you would be willing to be interviewed, please provide a contact email address in the box below.

Thank you for your participation in the survey. Your responses will help us to gain an understanding of the background of people taking postgraduate qualifications.

*Please submit your answers by clicking on the **Submit Survey** button below.*

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[on submitting the survey, the respondent's web browser was re-directed to a page hosted on the Cathie Marsh Centre for Census and Survey Research website, containing the following text:

THANK YOU FOR YOUR RESPONSES!

SURVEY OF POSTGRADUATE STUDENTS

Your participation in the research project is very helpful and much appreciated. It will help us to get a clearer picture of the background of current postgraduate students.

If you indicated that you would like to be informed of the results of the research and/or that you would be willing to be interviewed we will be in touch again in the future.]

Appendix 3: Selection of online survey software

There are now a whole range of software packages which can be used to create, deploy and manage an online survey via the web. Entering the term “online survey software” into the Google search engine generates links to scores of such packages. This appendix describes the packages evaluated for use in doctoral research and the reasons for the selection of the WebSurveyor package.¹⁶⁵

The available survey software can be divided into two types: proprietary software which requires a licence to operate and may need to be installed as an application on a PC or server; and ‘freeware’, usually accessible at no cost through a web-site but which may mean putting up with various sorts of on-screen advertising.

An initial decision was taken to select a package which was licensed to the University of Manchester. This was for three main reasons:

1. Support would be available in the case of technical problems.
2. Data would be held securely.
3. Cost (since no purchase of an individual licence would be necessary).

At the point at which the survey was being designed and planned, this effectively meant a choice between three main packages: SPSS Data Entry Server; SelectSurveyASP; and WebSurveyor.

Whilst SPSS is a well-respected brand in survey research, principally for its eponymous statistical analysis package, the advice from the University’s IT Services division was that the server had not performed well in evaluation tests and was unlikely to be supported into the future, on the grounds of technical instability.

SelectSurveyASP, on the other hand, had been purchased by the Faculty of Humanities as its online survey application of choice. A training course is available for this package, which I attended in November 2005. The package is very easy to use, operates via a web interface and has a facility for easily exporting data into SPSS for analysis. It offers a readily customisable look-and-feel, contact management facilities which allow for respondent’s email contact details to be held in the software and survey contacts generated from the information. There is limited support for ‘routing’, whereby the questions respondents see are conditional on their answers to earlier questions.

WebSurveyor was purchased by Manchester Business School and also runs via a web interface. It is slightly more complicated to operate than SelectSurveyASP, but it offers some important advantages in functionality. Routing can be based both on responses to previous questions in the survey *and* on data already held about the respondent – for instance if the sex of respondents was known prior to the survey, it would be possible to give men and women different sets of questions. Crucially, WebSurveyor can be used to prevent ‘ballot stuffing’ by limiting each respondent to a single response, either via use of their IP address or by assigning them a unique identifier (which is recognised through the

¹⁶⁵ WebSurveyor has been acquired by Vovici. The version of the software used for the research reported in this thesis seems no longer to be available, having been replaced by Vovici’s own product.

survey URL which they receive). Finally WebSurveyor allowed sophisticated control over the look-and-feel of the survey through the use of a HTML editor. This proved to be very useful in tailoring the questionnaire for each institution.

WebSurveyor also has a contacts management module, but this failed to work properly during the pre-pilot. As a result, emails were generated using Microsoft Word and Outlook Express' 'merge to email' capabilities without any detrimental effect. On balance however, it offered the most suitable functionality for the research, with the least drawbacks and hence was selected for the online survey of postgraduate students.

Appendix 4: Further details of survey pilot stages

Pre-pilot stage

The pre-pilot questionnaire was sent to 51 individuals via email. The sample comprised fellow PhD students in the Cathie Marsh Centre for Census and Survey Research (fourteen) and Sociology (four) at Manchester, academic staff in CCSR (eight) and elsewhere (four), PhD student friends and acquaintances from the UK, the rest of Europe and North America (twelve), friends with postgraduate qualifications (six) and other friends and relatives (three). This was in no way intended as a representative sample of any population; the aim instead was to ensure that the survey worked and if possible to get some 'expert review' (via the academics and students in CCSR) of the survey questions.

Emails contained a URL of the form:

<http://surveyor.mbs.ac.uk/ss/wsb.dll/PWakeling/postgrad.htm?UNIQUEID=PRE001>

where each respondent was allocated an identifier (in the example above 'PRE001'). The URL passed the respondent's identifier into a database field held within the on-line survey software when the respondent electronically submitted their questionnaire. In this way it was possible to identify which respondents had completed the survey. This technique was repeated for the main survey in the three cases where institutions had provided contact details.

No technical problems were encountered by the pre-pilot respondents in accessing or submitting the questionnaire, regardless of browser, internet connection or operating system. The response rate was 78%. With hindsight I would have preceded this stage of the survey with a cognitive interviewing exercise, whereby a handful of respondents would be observed responding to the questionnaire, with face-to-face feedback on its construction (Willis, 2005). However for certain questions, such as those on social class background, cognitive interviewing may not have helped as comparability with other surveys was paramount and because there were pre-defined questions, available via the Office for National Statistics.

Pre-pilot results highlighted a few areas where wording needed to be change to improve understanding of questions. The preamble to the questionnaire was simplified and the tone was altered to comply with Dillman's (2007) approach to self-completion surveys, which seeks to encourage the respondent's altruism (in this case by convincing them that completing the survey is useful and helpful), drawing on Blau's (1964) 'social exchange' theory. Question order was changed so that questions about educational and work history were in chronological order to aid recall, starting with school then moving through undergraduate to postgraduate study. Otherwise the ordering was unchanged: the questionnaire begins with details on current and prior academic activity, with socio-demographic questions which are considered to be more sensitive (such as those about social class, family situation, ethnicity etc.) placed towards the end as prior research indicates this aids the response rate (Dillman, 2007; Fowler, 1995). Following advice from colleagues at Kingston University who have undertaken research in this area, I amended the final section of the questionnaire where respondents were asked if they would be willing to be interviewed in connection with the study (for which they needed to enter their

email contact details).¹⁶⁶ To comply with data protection requirements, the need to retain this personal data was made explicit.

Pilot stage

As described in Chapter 4 (Table 4.2), four versions of the questionnaire were tested in the pilot survey to ascertain whether survey length and randomised item ordering for some questions would have an effect on response rate. The questions omitted in the short version of the pilot were those assigned a lower priority in the initial list of variables drawn up prior to questionnaire drafting (those on nationality, family situation, region of origin, reason for pursuing postgraduate study and prior activity). Randomised item ordering (where the randomisation is performed on-the-fly by the survey software) was tested in questions on prior activity, source of funding, reason for pursuing postgraduate study, highest qualification prior to undergraduate study, marital status and current employment status. After careful consideration it was decided not to test randomisation of the questions on natal and current social class. Survey methodologists have shown that there can be item-ordering effects with hierarchically ordered categories, such that respondents often either avoid selecting categories they perceive as having lower prestige (in this case the social classes appearing to be 'lowest'); or they 'satisfice', whereby they select the first potentially suitable response in a multiple-response-category question rather than reading through all the categories and then choosing the most appropriate (Dillman, 2007). Both of these phenomena will generate measurement error. However where social class is concerned, the question based on ONS' suggestion for self-completion questionnaires (see Appendix 7) is complicated; in this case the implied order of the categories may actually help the respondent to find the right place for the occupation in question within a perceived hierarchy.¹⁶⁷

Ideally, if I had been supplied with full contact details for the survey population at the pilot institution I would have used a software package such as Microsoft Excel or SPSS to randomly allocate potential respondents to one of four equally-sized groups, each of whom would receive an invitation to respond to one of the four versions of the survey. Lacking these details it was necessary to implement a technical workaround. This operated by sending all respondents to the same webpage. The webpage contained a script which sent the respondent to one of the four versions of the surveys according to the exact time they accessed the webpage. This worked because the number of seconds in one minute is divisible precisely by four. For instance, someone recorded by the web server as clicking through at 10:01:01 would be re-directed to the first survey, as would someone clicking through at 10:01:05, 10:01:09 and so on. Those clicking through at 10:01:02 would go to the second survey, 10:01:03 the third survey and 10:01:04 the fourth survey. Although this might not give 'pure' random allocation, it was a close enough approximation for the experiment to work.

Random allocation with a relatively low number of repetitions is unlikely to result in an equal four-way split between the four experimental groups and this was indeed the case as shown in Table A4.1. On the face of it, it seems that the short, non-randomised version generated the highest response. However these numbers do not give the whole picture. To accurately assess which version of the survey was best at generating completions it is

¹⁶⁶ Respondents were asked this question as I was unsure at the time whether to include follow-up in-depth interviews as part of the study. Qualitative research with the respondents has begun on a pilot basis but falls outside the scope of this thesis.

¹⁶⁷ The issue surrounding this question arose during the pre-pilot, where the quasi-random category order used in the Oxford questionnaire (Heath and Zimdars, 2003) was replicated.

necessary also to know how many respondents were re-directed to the survey in the first place and how many non-eligible respondents there were for each survey (since non-eligible respondents did not complete the survey in full and hence would not be affected by its length etc.). Data is available for both these additional requirements. Unfortunately however, no data is available on the eligibility of those *abandoning* the survey. This would be required to give the whole picture. However it is unlikely that those abandoning the survey would do so before answering the first two qualifying questions.

Making a judgement ‘by eye’ suggests that the apparent difference in response rate seen in the raw figures (where the short non-randomised survey appeared the most successful) is an artefact of differential click-through rates for each survey. However to be certain, a chi-square test can be applied to establish whether the small difference in response rate across survey types could be due to chance.

Table A4.1: pilot survey response rates by experimental group

Survey	Total ‘traffic’		Total number of completions		Total ‘eligible’ completions	
	n	%	n	%	n	%
Long, random	135	21.8	121	22.2	90	21.0
Long, not random	142	22.9	121	22.2	100	23.4
Short, random	156	25.2	137	25.1	114	26.6
Short, not random	187	30.1	166	30.5	124	29.0
<i>Total</i>	<i>620</i>	<i>100.0</i>	<i>545</i>	<i>100.0</i>	<i>428</i>	<i>100.0</i>

The chi square calculation was carried out on six different permutations of the data (four 2×2 tables and two 4×2):

1. Long vs. short versions of the survey (baseline=total traffic).
2. Long vs. short (baseline=total traffic, adjusted downwards on the assumption that a proportion of those abandoning the survey would be non-eligible in any case, with the proportion of non-eligible abandoners equivalent to the proportion of non-eligibles among respondents).
3. Survey with some randomised questions vs. Non-randomised survey (baseline=total traffic).
4. Random vs. non-random (baseline=total traffic, adjusted as in ‘2’ above).
5. All four versions of survey (baseline=total traffic).
6. All four versions of survey (baseline=adjusted traffic).

None of these comparisons showed statistically significant differences in response rate. In other words, one cannot reject the null hypothesis that the differences in response rate between the four versions of the survey were simply the result of chance. Substantively however, the comparison of interest is between the long and short versions of the survey, since only a few questions had randomised response order and this is unlikely to affect abandonment rates in practice. Likewise there is no substantive reason why one would expect to see an *interaction* between randomised response order in questions and survey length in a relatively short and straightforward survey such as this one. Ignoring the chi square test itself for a moment, comparing observed and expected frequencies from the table marginals suggests that if all respondents had been asked to complete the short version of the survey, only *one* additional response would have been received. Turning this

on its head, using the long version would have sacrificed one response for an additional seven item responses from over 200 respondents. Similarly, chi-square tests were performed on each question where the item order was subject to randomisation to see if there were significantly different patterns of response between the randomised and non-randomised experimental groups. This analysis showed that those in the non-randomised group were significantly more likely to state that their maintenance funding was from an ‘other’ source and also significantly less likely to agree that they were undertaking postgraduate study “because I had enjoyed my first course and wanted to continue studying”. However both of these items were listed alongside other sources of maintenance funding and reasons for pursuing postgraduate study where there were no statistically significant differences between the experimental groups. It was therefore concluded that the long non-randomised version of the questionnaire should be adopted for the main survey.

Table A4.2: Actual and expected values and chi square test for comparison of ‘long’ and ‘short’ versions of the pilot questionnaire

(a) based on ‘assumed eligible’ responses

<i>Actual</i>				<i>Expected</i>			
Survey version	Responded	Didn’t Respond	Total	Survey version	Responded	Didn’t Respond	Total
Long	190	28	218	Long	192	26	218
Short	238	31	269	Short	236	33	269
<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>	<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>

Not significant (p=0.657)

(b) based on total traffic

<i>Actual</i>				<i>Expected</i>			
Survey version	Responded	Didn’t Respond	Total	Survey version	Responded	Didn’t Respond	Total
Long	190	87	277	Long	191	86	277
Short	238	105	343	Short	237	106	343
<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>	<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>

Not significant (p=0.831)

Table A4.3: Actual and expected values and chi square test for comparison of 'randomised and 'non-randomised' versions of the pilot questionnaire

(a) based on 'assumed eligible' responses

<i>Actual</i>				<i>Expected</i>			
Survey version	Responded	Didn't Respond	Total	Survey version	Responded	Didn't Respond	Total
Rand.	204	26	230	Rand.	202	28	230
Non-rnd.	224	33	257	Non-rnd.	226	31	257
<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>	<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>

Not significant (p=0.604)

(b) based on total traffic

<i>Actual</i>				<i>Expected</i>			
Survey version	Responded	Didn't Respond	Total	Survey version	Responded	Didn't Respond	Total
Rand.	204	87	291	Rand.	201	90	291
Non-rnd.	224	105	329	Non-rnd.	227	102	329
<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>	<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>

Not significant (p=0.588)

Table A4.4: Actual and expected values and chi square test for four-way comparison of versions of the pilot questionnaire

(a) based on 'assumed eligible' responses

<i>Actual</i>				<i>Expected</i>			
Survey version	Resp.'ed	Didn't Resp	Total	Survey version	Resp.'ed	Didn't Resp	Total
Long, rand.	90	10	100	Long, rand.	88	12	100
Long, non-rnd.	100	17	117	Long, non-rnd.	103	14	117
Short, rand	114	16	130	Short, rand	114	16	130
Short, non-rnd.	124	16	140	Short, non-rnd.	123	17	140
<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>	<i>Total</i>	<i>428</i>	<i>59</i>	<i>487</i>

Not significant (p=0.770)

(b) based on total traffic

<i>Actual</i>			
Survey version	Resp.'ed	Didn't Resp	Total
Long, rand.	90	45	135
Long, non-rnd.	100	42	142
Short, rand	114	42	156
Short, non-rnd.	124	63	187
<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>

<i>Expected</i>			
Survey version	Resp.'ed	Didn't Resp	Total
Long, rand.	93	42	135
Long, non-rnd.	98	44	142
Short, rand	108	48	156
Short, non-rnd.	129	58	187
<i>Total</i>	<i>428</i>	<i>192</i>	<i>620</i>

Not significant (p=0.508)

Appendix 5: Survey institutions, response rate and duplicates

This appendix provides further details of the survey institutions and how they were recruited; response rate and procedures adopted at each institution together with a note on how duplicate responses were dealt with.

Survey ‘sponsors’

Prior to beginning recruitment of higher education institutions to participate in the survey, a number of organisations which might be interested in the results of the survey were approached for endorsement. The rationale was that such backing would enhance the validity of the survey and should therefore improve the chances of recruiting institutional participants. Six organisations were approached. Of these, four endorsed the survey (National Postgraduate Committee, UK Council for Graduate Education, Office for Fair Access and Research Councils UK). HEFCE expressed interest but declined formally to support the survey. Universities UK also expressed interest but did not reply to confirm support thereafter.

Recruitment of institutional participants

It was anticipated at the planning stage that recruiting sufficient institutions to participate in the study would be difficult, hence a purposive approach to recruitment was adopted using institutions with which I had some relationship, where I had access to a potential ‘gatekeeper’ (sometimes by proxy) or was aware that senior managers were interested in the research topic and in a position to endorse their institutions’ participation. Given this approach it was acknowledged at the outset that the sampling design would not allow the calculation of robust population estimates for postgraduates for the UK, nor would it be possible to fit a multilevel model to this data (due to the small number of level 2 units). However in assembling the institutions to take part in the survey I tried to ensure at least nominal representation of different kinds of institutional mission, age, size and geographical location.

Table A5.1: Summary of institutional participant recruitment activity

Activity	No. of contacts	Resulting participants
Existing personal contacts	2	2
Presentation at Fourth Annual Postgraduate Conference, Barbican Centre, London, April 2006	4	2
Speculative letter to institutions considered to be sympathetic to the issue	4	2
Presentation to Russell Group widening participation officers group, April 2007	3	1
Presentation to Association of University Administrators Conference, April 2007 and subsequent email to their email discussion list	7	2
Unsolicited contact by institution	1	0
<i>Total</i>	<i>21</i>	<i>9</i>

With the benefit of hindsight, it would appear that a two-stage cluster design with random sampling of UK higher education institutions as the first stage *could* have been achieved. Those institutions which were ‘cold called’ seemed no more or less likely to assent to the survey; indeed there was no discernible pattern to agreements and refusals. The first stage of recruitment comprised writing letters to senior managers of a small number of institutions. A second stage involved soliciting further volunteers following conference and seminar presentations I gave on the topic of widening participation in postgraduate education (Wakeling, 2006, 2007b; Wakeling & Morgan, 2007). In total, twenty-one institutions were contacted or contacted me. Table A5.1 summarises the institutions contacted and their response.

Participating institutions

Details of the participating institutions are given in Table A5.2. As noted in the main text, unfortunately it was not possible to recruit institutions from Scotland, Wales or Northern Ireland.

Table A5.2: Details of institutional participants

Pseudonym	Region	Location	Type of institution	Students 2006/07	% PG
Damethorpe University	North	Suburban	Post-1992	10,000	20
Dibley City University	South	Urban	Post-1992	20,000	25
Otherford University	Midlands	Suburban	Pre-1992	15,000	35
University of Central Albion	Midlands	Suburban	Pre-1992	35,000	25
University of Gusset	North	Suburban	Pre-1992	15,000	30
University of Ravingham	North	Urban	Pre-1992	40,000	30
University of Riverby	South	Urban	Post-1992	10,000	5
University of Topton	Midlands	Urban	Pre-1992	15,000	40
Waterworth College	South	Semi-rural	Specialist	2,000	10

Source for student numbers: HESA (2008a, Table 0)

Notes:

Student numbers have been rounded to the nearest 5,000 to preserve institutional anonymity. Per cent of students who are postgraduate has been rounded to the nearest 5%.

Slightly different procedures were required in implementing the survey at different institutions. At Gusset, it was possible to obtain limited microdata giving student email addresses and some basic details (course type, gender, domicile). At Damethorpe and Riverby individual email addresses, but no further details were provided. Gusset and Riverby were able to provide ‘preferred’ email addresses (e.g. including Hotmail etc.) whereas Damethorpe provided institutional email addresses only, which may be checked less frequently or not used. At other participating institutions postgraduate students were sent an email either to an existing email distribution list (known to have been the case at Ravingham) or to a specially-created list of postgraduates (known to have been the case at Dibley City). Comparing responses received to published HESA statistics indicates that PGCE students were inadvertently omitted from the survey at Gusset and Topton. A further known issue at Ravingham was that staff registered as postgraduate students were excluded from the distribution list used. The differences between distribution techniques across the institutions also meant it was only possible to restrict the survey to UK-

domiciled students in some of the sites. Where this was not possible, additional questions were included in the survey to filter out invalid responses. This applied to Central Albion, Damethorpe, Ravingham and Waterworth. At Dibley City it appeared that non-UK-domiciled students had been inadvertently included in the email invitation issued by the institution; this had not been expected and so the additional survey questions were not included. Non-UK-domiciled students were deleted from the dataset where they met all the following conditions: nationality was not British; region of current abode was non-UK or missing; undergraduate institution was non-UK or missing; year of undergraduate award was after 2002 (on the assumption that those qualifying earlier than this could have leave to remain in the UK and would therefore count as UK-domiciled).

As the research on unit nonresponse in student surveys detailed in Chapter 5 suggests the availability of computers on campus affects response rates, I approached the Universities and Colleges Information Systems Association (UCISA) for information on PC:student ratios. Although they collect this data from their member institutions they were unwilling to release it. For 2005/06 UCISA summary statistics indicate there were 7.1 students for each computer workstation in UCISA member institutions (source: UCISA Higher Education Information Technology Statistics, 2005/06, available at: <http://www.ucisa.ac.uk/members/statistics/2006.aspx>, accessed 28 May 2009). According to UCISA, on average, four out of every five students have access to their own computer, although the range across the 58 institutions responding to this element of the survey was 58% to 100% of students (source: *ibid*).

Response rates and duplicates

Table A5.3 summarises the responses for each participating institution.

Although the software package used allowed capture of respondent 'IP address' (a unique number which identifies the sender of any piece of information across the internet) it was not possible to use this as a proxy unique identifier because: (i) two respondents might share a computer when responding or might use the same computer independently (e.g. if it is in a shared computer classroom); and (ii) many IP addresses do not identify a single machine but rather a group of them. This is common for universities (one institutional IP address accounted for 94 responses) and for many internet service providers. Instead, duplicates were identified by comparing responses given and deleting those few cases where close to identical responses were made across many items. In some cases a duplicate email address was given.

Where individual email addresses were supplied it was possible to monitor non-delivery of emails as institutional email 'postmasters' generated automatic replies. Emails 'bounced back' due to address errors and problems with the users' email accounts. In a handful of cases I was contacted directly by the recipient of the email to indicate that they were no longer a postgraduate student.

Some surveys offer incentives for completion, be this cash, vouchers or entry to a prize draw. Research on the effectiveness of such incentives suggests that lotteries either do not affect (Porter & Whitcomb, 2003) or negatively affect response rates (Sax et al, 2003) and that if an incentive is to be used the most effective type is pre-payment of cash unconditional on participation in the survey (Dillman, 2007). It would be difficult to arrange pre-payment for an online survey (such incentives are usually mailed with a hard-copy questionnaire) and in any case I lacked a budget to support this. Given the reported ineffectiveness of lotteries, no other incentives were offered.

Table A5.3: Details of institutional responses

Institution	Email errors	Abandon rate	Actuals	Duplic.s	Non UK domicile	Valid <i>n</i>	Response rate
Damethorpe	38	24%	133	0	3	130	11%
Dibley City	n/a	34%	368	1	10	357	9%
Otherford	n/a	30%	377	2	0	375	14%
Central Albion	n/a	39%	391	1	69	321	11%
Gusset	92	18%	259	0	0	259	19%
Ravingham	n/a	13%	545	0	117	428	8%
Riverby	41	23%	49	0	0	49	17%
Topton	n/a	30%	377	2	0	375	14%
Waterworth	n/a	33%	12	0	2	10	6%
<i>Total</i>	171	-	2,388	6	201	2,181	11%

Notes:

'Abandon rate' reports the proportion of those clicking through to the survey who did not complete it (this statistic was generated automatically by the WebSurveyor software)

Response rate is calculated from UK-domiciled postgraduate student numbers for 2006/07 which were obtained from institutions (Central Albion, Gusset, Ravingham, Riverby, Tipton) or from HESA (2008a).

The experience of a Swiss Federal research team which achieved a 64% response rate for an internet survey on students' social and economic situation (de Luigi, 2009) put my response rate into context. The team was able to send an official letter from the Swiss Confederation about the survey with two reminders, also by letter (which Dillman (2007) reports to be more effective than email reminders). Finally, the lead researcher also suggested that "from a cultural point of view, I must say that the Swiss are used to expressing their opinion (via 'direct democracy'). It is therefore not impossible to imagine that it is the habit in Switzerland to respond to any invitation to express one's opinion." (Valentina de Luigi, [Swiss] Office Fédérale de la Statistique, personal communication, 24 June 2009; my translation). This is probably not true of the UK!

Appendix 6: Derivation of social class

As described in the main text, social class was operationalised in the thesis using the National Statistics Socio-Economic Classification (NS-SEC). This is the measure used in most official statistics and has been adopted for higher education statistics as published by UCAS, HESA and others. Its development, which consciously drew on the similar schema elaborated by Goldthorpe and colleagues (Erikson and Goldthorpe, 1992; Goldthorpe, 1987) is described in Rose and O'Reilly (1997) and Rose and Pevalin (2001, 2003).

The destinations dataset

HESA destinations data for 2002/03 to 2004/05 was provided with NS-SEC group already coded. The problem here was for data from 2001/02 where social class was coded using the previous Registrar General's Social Class schema and for 2002/03 – 2004/05 records which continued to use this scheme. If NS-SEC data was available for a case, that was used. Where only RGSC data was available this was re-coded into NS-SEC following the approach adopted and tested by Heath *et al* (2003), which essentially meant assigning cases to the NS-SEC group which showed the greatest overlap with the RGSC class in question in their data (taken from the British Household Panel Survey).

Online survey dataset

For the online survey, social class was derived using the 'NS-SEC Self-Coded Method', as set out by National Statistics (2002) and also used by Heath and Zimdars (2003) in their pilot study of the social class background of postgraduates at the University of Oxford. ONS reports 75% agreement between self- and interviewer-coded cases.

I made some important adaptations to the ONS method. Whereas the recommended method requests information on type of employment (managerial, routine, technical etc.), employment status (employer, self-employed, employee) and the size of the organisation, I felt that the latter element would not be reliable and excluded it. It is unlikely that children would have an accurate enough knowledge of the size of the organisation with which their parents were associated. For the same reason, my implementation of the self-coded method did not distinguish between supervisors and other employees. Moreover, much of the 'supervisory status' information is likely to be coded already in the occupation question (e.g. respondents will identify their parents as managers rather than secretaries who are supervisors). Where no information on employment status was provided, I coded NS-SEC using the 'simplified' NS-SEC.

Tables A6.1a and b show, respectively, the recommended derivation of NS-SEC; and my implementation of it. The actual distribution of respondents to the pilot survey for mother's and father's NS-SEC was as follows. Of 258 responses for mother's class the absolute maximum which could be misclassified given by adaptation of the matrix was 108, although it is likely to be substantially fewer than that; for father's class, the equivalent figures are 291 and 73 respectively.

Table A6.1: Self-coded derivation of NS-SEC

(a) ONS five-class matrix

Self-coded occupation	Employment status/size of organisation						
	1 Employers - large organisations	2 Employers - small organisations	3 Self employed - no employees	4 Managers - large organisations	5 Managers - small organisations	6 Supervisors	7 Other employees
1 Modern professional occupations	1	1	1	1	1	1	1
2 Clerical and intermediate occupations	1	3	3	1	1	1	2
3 Senior managers or administrators	1	3	3	1	1	1	1
4 Technical and craft occupations	1	3	3	1	1	4	4
5 Semi-routine manual and service occupations	1	3	3	1	1	4	5
6 Routine manual and service occupations	1	3	3	1	1	4	5
7 Middle or junior managers	1	3	3	1	1	1	1
8 Traditional professional occupations	1	1	1	1	1	1	1

Table A6.1: Self-coded derivation of NS-SEC (continued)

(b) adapted matrix for derivation of eight-class NS-SEC

Self-coded occupation	Employment status/size of organisation						
	1 Employers - large organisations	2 Employers - small organisations	3 Self employed - no employees	4 Managers - large organisations	5 Managers - small organisations	6 Supervisors	7 Other employees
1 Modern professional occupations	1		2			2	
2 Clerical and intermediate occupations	3		4			3	
3 Senior managers or administrators	1		4			1	
4 Technical and craft occupations	4		4			5	
5 Semi-routine manual and service occupations	}		4			6	
6 Routine manual and service occupations			4			7	
7 Middle or junior managers	1		4			2	
8 Traditional professional occupations	1		1			1	

Appendix 7: Further detail on multiple imputation

This appendix provides more detail on the consideration given to multiple imputation procedures for dealing with missing data which were discussed in Chapter 5.

For the destinations dataset I was seeking to impute values for a single variable only, that of social class. In this case the `uvis` command (univariate imputation sampling) is used in Stata. This “imputes missing values of the [dependent] variable from complete cases in [a list of independent variables]. The algorithm used is exactly as described by van Buuren, Boshuizen, and Knook (1999, section 3.2)” (Royston, 2004, p.232). Since `uvis` performs random draws from the conditional distribution of the missing observations, iterations give different results each time. Multiple imputed datasets are created and then combined in the model of interest using the rules specified by Rubin (1987) which is implemented for MICE by Royston’s `micombine` command in Stata.

An attempt was made to impute missing values for social class using the complete variables gender, subject group, institution type, academic year, degree classification and whether paid own tuition fees as predictors. Age was not included in the model as it has a small number of missing values; the `uvis` command is intended for use where covariates have no missing observations. The `mice` procedure as a whole can be used to ‘fill in’ missing covariates through chained equations. However this is a more complicated routine and in any case the missing covariates were not of substantive interest here. For computational reasons multinomial logistic regression was not possible (I ran `uvis` with `mlogit` to impute an eight-class version of NS-SEC, but this was still running after ten days with no output!), although ordinal logistic regression did prove feasible. A three-class social class variable was constructed for imputation purposes because NS-SEC categories are nominal in all except the three-category version (Rose & Pevalin, 2003). The `bootstrap` option was applied in `uvis` since this relaxes the assumption that regression coefficients are normally distributed (highly unlikely with categorical data). Five imputations were performed, based on Allison’s (2002, p. 50) observation “that even with 50% missing information, five datasets do a pretty good job”. A disappointing amount of overlap was attained between the imputed values (at best, 61.1% of missing cases were imputed the same social class value across each pair of iterations within the set of five; at worst this was 15.9%). Multiple imputation was abandoned at that point.

Appendix 8: Additional statistical model tables

The tables reproduced in this appendix relate to models A and B in Chapter 2. Whereas the models presented in Chapter 7 Tables 7.2 and 7.3 exclude Medicine and Dentistry as the reference category, the tables reproduced here include this subject.

Table A8.7.2: Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model A)

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Subject of study</i>										
Medicine					(reference category)					
Subjects Allied to Medicine	3.603 ***	0.438	1.115 n.s.	0.077	37.651 ***	14.988	0.877 n.s.	0.068	22.946 ***	3.916
Biological Sciences	12.223 ***	1.456	4.574 ***	0.303	306.894 ***	121.572	2.719 ***	0.196	71.827 ***	12.187
Agriculture & Veterinary Sciences	3.991 ***	0.574	2.380 ***	0.190	56.007 ***	22.745	1.581 ***	0.154	45.150 ***	7.881
Physical Sciences	22.636 ***	2.690	5.408 ***	0.362	257.684 ***	102.179	2.093 ***	0.162	92.337 ***	15.694
Mathematical and Computing Sciences	4.756 ***	0.573	3.230 ***	0.215	163.610 ***	64.855	1.363 ***	0.103	106.115 ***	17.978
Engineering	6.651 ***	0.798	2.586 ***	0.175	46.611 ***	18.591	0.995 n.s.	0.082	89.546 ***	15.191
Technology	11.855 ***	1.596	2.346 ***	0.208	51.860 ***	21.65	0.876 n.s.	0.139	79.922 ***	14.045
Architecture, Building & Planning	1.146 n.s.	0.197	2.145 ***	0.161	12.475 ***	5.357	6.046 ***	0.452	37.418 ***	6.493
Social Studies	1.691 ***	0.211	4.112 ***	0.272	140.747 ***	55.795	2.767 ***	0.198	68.991 ***	11.702
Law	2.420 ***	0.326	5.859 ***	0.399	45.726 ***	18.397	35.296 ***	2.450	70.976 ***	12.145
Business & Administrative Studies	0.681 **	0.092	1.777 ***	0.119	46.739 ***	18.56	1.368 ***	0.100	55.049 ***	9.332
Mass Communications & Documentation	0.714 n.s.	0.132	1.838 ***	0.135	49.869 ***	19.999	1.585 ***	0.136	79.651 ***	13.594
Linguistics, Classics etc.	2.156 ***	0.272	4.655 ***	0.312	462.961 ***	183.445	4.677 ***	0.338	80.056 ***	13.628
European Languages etc.	1.134 n.s.	0.168	2.806 ***	0.202	295.184 ***	117.28	3.658 ***	0.297	65.181 ***	11.246
Non-European Languages etc.	2.050 ***	0.337	3.647 ***	0.294	191.043 ***	76.858	3.655 ***	0.367	87.169 ***	15.425
Historical & Philosophical Studies	3.669 ***	0.450	5.690 ***	0.380	353.049 ***	139.92	5.162 ***	0.371	95.802 ***	16.288
Creative Arts & Design	1.347 *	0.178	2.875 ***	0.193	206.551 ***	81.877	2.579 ***	0.186	103.256 ***	17.509
Education	0.506 ***	0.092	0.678 ***	0.053	221.483 ***	87.841	1.530 ***	0.122	22.880 ***	3.939
Combined	4.102 ***	0.523	3.720 ***	0.260	265.616 ***	105.48	3.951 ***	0.294	79.741 ***	13.628

Table A8.7.2 (continued): Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model A)[†]

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Institution type</i>										
Other pre-1992 universities	0.195 ***	0.031	0.626 ***	0.024	(reference category)		2.453 ***	0.099	1.034 n.s.	0.030
Specialist HE colleges	0.192 ***	0.013	0.484 ***	0.011	0.484 ***	0.029	0.963 n.s.	0.029	0.929 ***	0.017
Generalist HE colleges	0.288 ***	0.008	0.637 ***	0.008	1.204 ***	0.027	1.076 ***	0.020	1.123 ***	0.013
Post-1992 universities	1.302 ***	0.024	0.964 **	0.011	0.689 ***	0.012	1.414 ***	0.026	1.031 *	0.014
Russell Group					0.922 ***	0.016				
<i>Degree classification</i>										
I					(reference category)					
II(i)	0.224 ***	0.004	0.588 ***	0.008	1.119 ***	0.026	0.823 ***	0.018	1.140 ***	0.020
II(ii)	0.049 ***	0.002	0.413 ***	0.006	0.957 n.s.	0.0230	0.590 ***	0.014	1.470 ***	0.026
III/Pass	0.016 ***	0.002	0.272 ***	0.008	0.666 ***	0.027	0.475 ***	0.020	1.969 ***	0.044
Unclassified	0.060 ***	0.005	0.141 ***	0.006	0.979 n.s.	0.044	0.535 ***	0.024	1.385 ***	0.038
<i>Academic year</i>										
2001/02					(reference category)					
2002/03	0.856 ***	0.02	0.998 n.s.	0.013	1.056 **	0.021	0.575 ***	0.011	1.017 n.s.	0.013
2003/04	0.831 ***	0.019	0.994 n.s.	0.013	1.129 ***	0.021	0.573 ***	0.01	0.938 ***	0.012
2004/05	0.769 ***	0.018	0.953 ***	0.012	1.154 ***	0.022	0.528 ***	0.01	0.962 **	0.012

[†] RRR = Relative Risk Ratio. Model statistics: pseudo $r^2 = 0.063$; $\chi^2 < 0.001$; log likelihood = -1,075,024. Source: HESA Student Record 2001/02 – 2004/05, First Destinations Survey 2001/02 and DLHE 2002/03 – 2004/05. Parameter significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (this notation applies to all subsequent models too). Emboldened parameters are those referred to in the text. Sources: FDS 2001/02; DLHE 2004/05; HESA Student Record 2001/02 – 2004/05

Table A8.7.3: Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model B)

Explanatory variable	Higher degree by research			Taught higher degree			PGCE			Other PG qualification			Assumed unemployed			
	RRR	S.E.		RRR	S.E.		RRR	S.E.		RRR	S.E.		RRR	S.E.		
<i>Subject of study</i>																
Medicine			(reference category)													
Subjects Allied to Medicine	3.948 ***	0.549	0.860 n.s.	0.067	0.067	26.331 ***	11.514	0.386 ***	0.0370	25.459 ***	5.795					
Biological Sciences	10.885 ***	1.482	3.039 ***	0.223	0.223	200.303 ***	87.026	1.311 **	0.111	70.255 ***	15.883					
Agriculture & Veterinary Sciences	3.680 ***	0.636	1.611 ***	0.157	0.157	38.778 ***	17.480	1.174 n.s.	0.137	44.880 ***	10.500					
Physical Sciences	17.98 ***	2.442	3.516 ***	0.260	0.260	190.061 ***	82.671	1.020 n.s.	0.093	85.877 ***	19.434					
Mathematical and Computing Sciences	3.498 ***	0.482	2.051 ***	0.152	0.152	151.204 ***	65.757	0.713 ***	0.065	84.998 ***	19.198					
Engineering	4.5420 ***	0.624	1.471 ***	0.111	0.111	43.158 ***	18.922	0.518 ***	0.052	70.062 ***	15.839					
Technology	11.296 ***	1.746	1.798 ***	0.185	0.185	46.666 ***	21.682	0.475 ***	0.099	72.709 ***	17.068					
Architecture, Building & Planning	0.769 n.s.	0.160	1.420 ***	0.122	0.122	13.599 ***	6.435	3.618 ***	0.322	29.400 ***	6.813					
Social Studies	1.234 n.s.	0.177	2.783 ***	0.204	0.204	91.990 ***	40.005	1.367 ***	0.115	65.160 ***	14.728					
Law	1.756 ***	0.274	3.885 ***	0.293	0.293	31.025 ***	13.706	17.309 ***	1.407	66.021 ***	15.038					
Business & Administrative Studies	0.443 ***	0.072	1.136 n.s.	0.085	0.085	32.543 ***	14.191	0.704 ***	0.061	51.487 ***	11.638					
Mass Communications & Documentation	0.550 **	0.126	1.427 ***	0.118	0.118	33.625 ***	14.848	0.916 n.s.	0.094	79.006 ***	17.974					
Linguistics, Classics etc.	1.834 ***	0.265	3.215 ***	0.239	0.239	267.435 ***	116.232	2.188 ***	0.186	80.051 ***	18.147					
European Languages etc.	0.998 n.s.	0.169	1.913 ***	0.153	0.153	169.093 ***	73.716	1.824 ***	0.172	61.197 ***	14.035					
Non-European Languages etc.	1.806 **	0.339	2.495 ***	0.229	0.229	110.676 ***	49.069	1.564 ***	0.194	83.774 ***	19.687					
Historical & Philosophical Studies	2.722 ***	0.382	3.612 ***	0.266	0.266	219.807 ***	95.552	2.464 ***	0.207	84.570 ***	19.145					
Creative Arts & Design	1.161 n.s.	0.179	1.944 ***	0.146	0.146	153.489 ***	66.751	1.252 *	0.109	96.947 ***	21.924					
Education	0.375 ***	0.088	0.453 ***	0.042	0.042	125.456 ***	54.606	0.784 *	0.076	20.561 ***	4.734					
Combined	3.649 ***	0.529	2.531 ***	0.197	0.197	177.814 ***	77.482	1.972 ***	0.173	74.535 ***	16.961					
<i>Institution type</i>																
Other pre-1992 universities			(reference category)													
Specialist HE colleges	0.075 ***	0.025	0.502 ***	0.028	0.028	0.278 ***	0.027	1.489 ***	0.098	0.948 n.s.	0.041					
Generalist HE colleges	0.152 ***	0.014	0.438 ***	0.012	0.012	1.030 n.s.	0.028	0.791 ***	0.032	0.87 ***	0.021					
Post-1992 universities	0.236 ***	0.009	0.588 ***	0.009	0.009	0.580 ***	0.013	0.916 ***	0.022	0.991 n.s.	0.016					
Russell Group	1.352 ***	0.029	0.959 **	0.013	0.013	0.921 ***	0.018	1.44 ***	0.030	1.061 ***	0.017					

Table A8.7.3 (continued): Multinomial logistic regression model output for 'outcome' following a full-time first-degree for UK-domiciled graduates, 2001/02 – 2004/05 (Model B)[†]

Explanatory variable	Higher degree by research		Taught higher degree		PGCE		Other PG qualification		Assumed unemployed	
	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.	RRR	S.E.
<i>Degree classification</i>										
I										
II(i)	0.232 ***	0.005	0.605 ***	0.009	(reference category)		0.833 ***	0.022	1.193 ***	0.026
II(ii)	0.048 ***	0.002	0.424 ***	0.008	1.173 ***	0.033	0.602 ***	0.018	1.478 ***	0.034
III/Pass	0.012 ***	0.002	0.252 ***	0.010	1.083 **	0.032	0.505 ***	0.029	1.882 ***	0.056
Unclassified	0.055 ***	0.005	0.13 ***	0.007	0.872 **	0.044	0.372 ***	0.025	1.219 ***	0.046
<i>Academic year</i>										
2001/02					(reference category)					
2002/03	0.836 ***	0.022	0.973 n.s.	0.016	1.002 n.s.	0.024	0.521 ***	0.012	0.996 n.s.	0.017
2003/04	0.824 ***	0.022	0.951 **	0.015	1.108 ***	0.026	0.539 ***	0.012	0.919 ***	0.016
2004/05	0.754 ***	0.021	0.906 ***	0.014	1.097 ***	0.025	0.483 ***	0.011	0.911 ***	0.015
<i>Social class</i>										
1 Higher managerial/professional					(reference category)					
2 Lower managerial/professional	0.891 ***	0.022	0.881 ***	0.013	1.062 n.s.	0.025	0.815 ***	0.018	0.89 ***	0.015
3 Intermediate occupations	0.883 ***	0.030	0.891 ***	0.018	1.202 ***	0.035	0.805 ***	0.024	0.964 n.s.	0.020
4 Small employers etc	0.603 ***	0.078	1.061 n.s.	0.052	1.481 ***	0.090	1.074 n.s.	0.079	1.136 **	0.054
5 Lower supervisory/technical	0.984 n.s.	0.034	0.887 ***	0.018	1.303 ***	0.038	0.780 ***	0.024	0.978 n.s.	0.021
6 Semi-routine occupations	0.990 n.s.	0.041	0.934 **	0.023	1.321 ***	0.044	0.833 ***	0.03	1.074 **	0.026
7 Routine occupations	0.959 n.s.	0.077	0.981 n.s.	0.040	1.591 ***	0.082	0.963 n.s.	0.058	1.280 ***	0.047
<i>Gender</i>										
Male					(reference category)					
Female	0.590 ***	0.012	0.804 ***	0.009	2.293 ***	0.044	1.223 ***	0.022	0.613 ***	0.008
Age	1.048 ***	0.002	1.029 ***	0.001	1.018 ***	0.002	1.029 ***	0.002	1.035 ***	0.001
<i>Liability for first degree tuition fees</i>										
Not liable					(reference category)					
Liable	0.924 ***	0.018	1.163 ***	0.013	0.979 n.s.	0.016	1.074 ***	0.018	0.966 **	0.012

[†] Model statistics: pseudo $r^2 = 0.071$; $\chi^2 < 0.001$; log likelihood = -683.055. Source: as Table 7.2 (which remains the same for Tables 7.4 – 7.6)

Appendix 9: Explanation of multilevel modelling as applied to education

Multilevel modelling begins from the premise that variation in (say) pupil performance in a test has two components. One is at the individual level ('level 1') where the characteristics of pupils, such as their age, gender, previous test score and so on will contribute towards prediction of their test performance. The other component of variance is at the school level ('level 2') since the pupils have been taught in schools. Conditions - such as the availability of textbooks or the quality of teaching - are unlikely to be identical across all schools. Given this clustering of pupils, the observations within a school are not independent, the usual requirement in a regression model.

In constructing a statistical model which reflects this 'nesting' of pupils within schools, one can estimate 'fixed' and 'random' elements to a regression model. Gender, for instance, may be held to be 'fixed' in that its effect is (conceptually at least) the same regardless of a pupil's school. The school effect is said to be 'random' in the sense that it is assumed the schools are randomly drawn from the universe of schools. Thus if a different set of schools were used, we might reasonably expect the effect of sex to remain the same but the effect sizes for the different schools to be different. Like Gelman and Hill (2006) I find the use of the term 'random' particularly unhelpful here, but it is the standard term in the literature. Matters are complicated in my analysis because *all* actual level 2 units (higher education institutions) are included in the dataset. Another way of expressing a multilevel model is to say that there are fixed *slopes* and random *intercepts*.

A multilevel regression model of this specification is written with two components: the first reports the fixed effects in the normal way, but with the constant term standing for the grand mean of the level 2 intercepts; the second, usually written as u_{0j} , denotes the level 2 variance, that is the variance of the school-level intercepts from the constant term in the fixed part of the model:

$$\begin{aligned}y_{ij} &= p_{ij} + e_{ij} \\p_{ij} &= \text{pr}(y_{ij} = 1 | x) \\ \log(p_{ij}) &= \beta_0 + \beta_1 x_{1ij} \dots + u_j \\ \text{var}(u_{0j}) &= \sigma_u^2\end{aligned}$$

(Gelman and Hill, 2006; Snijders and Bosker, 1999).

In this notation i stands for the individual-level (level 1) variables and j for the group-level (level 2) variables.

Appendix 10: Ethical considerations

The primary ethical imperative for the study was the assurance of anonymity for participants. The HESA datasets contain only aggregate data, with no personal details. However where there are small cell counts, disclosure is potentially possible: the usual example in relation to Census records is a sixteen-year old widow – such an individual is so rare that she could probably be identified in anonymised microdata (Elliot, 2005) and there is the potential for such cases in the HESA datasets when subject, institution and ethnicity are combined. HESA insists that statistics derived from its datasets conform to a rounding strategy to avoid small cell counts (see Appendix 1). This has been applied in the thesis for the secondary data but not for that collected in the survey, where the institutions are not identified.

Data from the online survey do not contain a personal identifier, except in two specific circumstances:

1. Where the student was attending one of the two institutions which provided email addresses containing name information.¹⁶⁸
2. Where the student voluntarily provided their email address in order to take part in a planned later stage of research (interviews) and/or to receive a summary of the findings of the research.

In both cases, email addresses have been separated from the response data and held in separate, password protected files on a single computer held securely at a private address. They are linked to responses by a unique identifier.

Institutions were promised anonymity; pseudonyms have been assigned. The voluntary nature of participation in the survey was stressed throughout (and can be seen explicitly in the survey instrument at Appendix 2). The research was subject to standard ethical approval procedures at the University of Manchester.

¹⁶⁸ One of the three institutions which provided individual email addresses supplied them in the form <student_number>@institution.ac.uk, for example 1010101@institution.ac.uk. Without access to the institution's student record system it is impossible to identify individuals with this data.

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