Beating the Odds (1): Inter-generational Social Mobility from a Human Capital Perspective

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ISER Working Papers
Number 2002-17

Institute for Social and Economic Research

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The support of both the Economic and Social Research Council (ESRC) and the University of Essex is gratefully acknowledged. The work reported in this paper is part of the scientific programme of the Institute for Social and Economic Research.

Acknowledgement:

This paper forms part of the work of the ESRC Research Centre on Micro-social Change

Readers wishing to cite this document are asked to use the following form of words:

> **Ghershuny,Jonathan (September 2002) 'Beating the Odds (1): Inter-generational Social Mobility from a Human Capital Perspective', *Working Papers of the Institute for Social and Economic Research*, paper 2002-17. Colchester: University of Essex.**

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ABSTRACT

The objective of this paper is to use a human capital measure as the positional indicator in an investigation of trends in equality of intergenerational life chances. The BHPS retrospective work and employment history files provide a continuous account of respondents' occupational positions throughout their adult lives, and also records of their parents employment circumstances (if any) when the respondents were aged 14. In a first series of analyses, a conventional Goldthorpe 3*3 mobility model is compared to a categorical model grouping fathers and children into human capital quintiles. The Goldthorpe analysis shows some increase in equality, over mid 20th century birth cohorts, whereas the human capital model shows no clear trend. The difference is explained by: (1) the exclusion of non-employed women from the Goldthorpe model, where the human capital estimation covers all the BHPS respondents irrespective of employment status; and (2) the use of constant-sized quintile groups in the human capital model where the sizes of the Goldthorpe classes change over time. A second series of analyses relies on regression models, explaining children's human capital scores at various ages in terms of their sex, birth cohort, father's human capital and various transformations of, and interactions among, these variables. Instantiations of these models show diverging trends of growth in the predicted mean human capital of children of low- and of high-human capital fathers over successive birth cohorts from the 1930s to the 1960s—implying a regular increase in the inequality of intergenerational life chances in Britain over this period.

This paper is part of the "Social Position and Life Chances" (SPLC) project, which aims to formulate and estimate new measures of social class appropriate for understanding life chances in modern Britain. An initial outline of the project is set out in ISER **Working Paper 2001—20**; the human capital measure used here is discussed in ISER **Working Paper 2002—2**. The relationship of wealth to human capital is discussed in ISER **Working Paper 2002—16,** and ISER **Working Paper 2002—18** develops a Gini-type index of intergenerational mobility. The SPLC project is part of the Research Programme of the ESRC Research Centre on Micro-social Change.

NON-TECHNICAL SUMMARY

This paper uses a scalar measure of human capital to estimate intergenerational social mobility in Britain. The gap between this approach to social mobility and the established British tradition, which considers mobility in terms of class categories based on employment situations, is not as great as might initially be imagined. It is contended here that, since individuals' labour market characteristics are determinants of their employment situations—and since it is now possible to operationalise a direct measure of human capital for empirical research purposes—so it is the human capital, rather than the employment situation, that should be considered constitutive of class position.

The argument follows recent discussions on the normative basis of mobility theory, which suggest that the traditional British focus on *equality of opportunity* (concerning probabilities of transitions between parents' and children's social positions) should be supplemented by considerations of the *level of rewards attached to those positions* (otherwise, for example, improvements in one might be compensated-for by reductions in the equality of the other). Since human capital scores are simultaneously measures of social position and of individuals' ability to obtain rewards, using of human capital measures permits the combination of the twin concerns with opportunities and rewards, into a single concern with "life chances".

The paper's main substantive focus is on the use of the British Household Panel Survey to address the long-standing proposition of the "liberal theory of industrialisation" that, in the course of economic development, opportunities for mobility become more equal. The first step is to consider just equality of opportunity, comparing the results from Goldthorpe class measures, with categorical measures constructed by reducing the parents' and children's human capital scores into quintile groups. Using the same samples, some inconsistencies emerge, reflecting (1) the wider coverage of the human capital-based analysis (which includes the whole of the second generation sample rather than just those with recent employment records), and (2) the constant sizes of the "marginal" distributions of parents' and children's positions that results from the use of the human capital quintile groups (rather than class categories whose sizes vary over time). Overall, however, the results are similar to the traditional ones: there is no consistent trend supportive of the liberal theory.

The second step uses the scalar measure of human capital to look at trends in intergenerational mobility in life chances, by constructing a regression model of the relationship between fathers' human capital, and their children's throug their life course. This model is instantiated to compare trends in human capital levels for children of low and of high human capital fathers, through successive mid-20th century birth cohorts. The conclusion is that while both groups show increases, those of high human capital fathers grow faster, implying that intergenerational mobility patterns are becoming more unequal. The "life chances" approach shows British mid-late 20th century mobility trends to be moving directly counter to the liberal theory prediction.

Beating the Odds (1): Intergenerational Social Mobility from a Human Capital Perspective

1 Names and qualities

Often there are relationships between names and measured qualities; names are attached to groups of cases on the basis of some shared characteristic or characteristics. But inevitably, information is lost when qualities of higher order are reduced to nominal ones. What we can do with named groups we can also do with ordinal or scalar characteristics, but there are some things, some useful forms of analysis, that we can do with higher order qualities, and in particular with scalar quantities, that we cannot do with nominal categories.

The central contention of the SPLC project is that social class categories are reductions from higher level qualities determining social position. Briefly, class location reflects control over resources (different forms of capital, fixed and embodied) and these are directly measurable as financial wealth and human capital. Social power (ie individuals' ability to achieve their own objectives in a social context) is proportional to the volume of these resources, and hence is by its nature a scalar quantity. These resources are relatively durable. If they are appropriately used they can reproduce themselves over time (though if inappropriately used they can dissipate). Wealth and human capital can, though with some difficulty, be converted, each into the other. Through the life course human capital is progressively transformed into wealth through savings and investment (Gershuny 2002b). Wealth in turn is used in conjunction with human capital and other embodied resources (social and cultural) to transmit social position across generations. These processes of reproduction and dissipation, transformation and transmission, are the subject of social mobility.

Classes-*for*-themselves, their members mutually adjusting their actions to a co-ordinated goal, are of course inherently categorical. But the volume of the class-resources varies in a continuous fashion across the population. And, in particular, a majority of British households now have some substantial wealth[1]. These considerations, and the observed uncertainties and

[1] For example Hamnett 1995, Table 15.1 implies that three-quarters of all UK households were owner occupied.

inconsistencies in the empirical evidence of British class consciousness and class identification summarised by Savage (2000 pp 34-40) mean that it will be rather difficult to establish the existence of any distinct class categories in twenty-first century Britain. There may sometimes be objectively common interests leading to shared patterns of behaviour, but certainly not the mutual recognition and articulation among the membership that is the condition for strong boundaries around classes. Categorical representations may still sometimes be useful in an ideal-typical sort of way, but at other times, as we shall see in what follows, they obscure more than they illuminate.

Much is lost by approaching mobility at a categorical level. For example, the relationships between the nominal class categories and the scalar qualities from which they are formed may differ over time, so the use of categorical models may lead to situations in which *apparent changes in mobility regimes might mask constancy, or constancy mask change.* As I shall show in the following pages, scalar representations of social position allow us to deal with this particular problem—and more generally, allow for *more powerful, compact, parsimonious models of mobility processes* than categorical ones do.

Scalar representation is the appropriate consequence of the sociological theory. If social mobility ultimately reflects the accumulation of the economically salient resources that underlie positions in a society, then it is only by understanding those processes of accumulation that we can understand how mobility is achieved. And to understand those processes of accumulation, we must measure or estimate the scale of those resources, in successive generations, and at successive points in the life course.

positions, conditions, and life-chances

Studies of intergenerational mobility in Britain have, over recent decades, concerned almost exclusively *equality of opportunity*. Children have chances of moving from their parents' social positions to different ones. This motion is of profound sociological interest in itself (see for example Goldthorpe 1980 Chapter 8). And if the positions are differently advantaged, then there is a further, normative, interest in the fairness of the way that children are selected into those positions. Recently however a new concern has surfaced, with *equality of condition* (Marshall et al 1997 pp 11-15, Swift 2000, 2002). Categorical class positions give rise to bundles of opportunities for different forms of what might broadly be considered consumption[2]. The normative interest in equality of opportunity might be vitiated if, for example, equality of access to advantaged positions increased, while at the same time the degree of advantage associated with some of the privileged positions diminished. The normative concern, after all, is ultimately not with names of positions, but with the conditions of life to which they give access.

The point of the scalar measures of social class, is that what is measured constitute the sources of the advantages about whose distributions we are concerned. So what appear to be two issues, the equalities of opportunity and of condition, become merged into a single question, concerning the *equality in the distribution of life-chances*, where individual life chances are defined as *the sum of the products of probability of arriving in each position and the value of the rewards attached to it*. Life chances consist of the range of future conditions of life open to an individual, combined with the distribution of probabilities of arriving at particular points in this range. A separate paper (Gershuny 2002c) discusses the competing, essentially political, views that underlie the emerging paradigmatic differences in approaches to measuring intergenerational mobility, and undertakes the construction of an index that meets Swift's (2000, p 672) requirement for a measure of the degree of equality of life chances. In this paper I make a first attempt at translating the central substantive concerns of the British mobility research, from the focus on equality of opportunity, to that of equality of life chances.

[2] Such opportunities include "…to go on holiday, buy goods, exercise authority over others at work.." as Swift 2000 put it – though I'm not certain that the third of these really belongs here.

2 Theory and motivation

"Fulfilling potentials" and "the liberal theory of industrialisation".

The dominant, indeed virtually monolithic, mobility research paradigm in the UK over the long period from 1970s until now, has been that provided by the analytic structure set out in Goldthorpe et al 1980. At the heart of this approach is an essentially micro-sociological concern. Goldthorpe's underlying interests, are as he wrote in 1980, not of a normative but of a positive kind, in the extent to which "…characteristic features of the social structure of a liberal democracy…prevent individuals of certain social origins from realizing their full potentialities as citizens, or indeed as human beings" (Goldthorpe et al 1980 p27). Towards the end of that same 1980 paragraph, he states that he sees "… greater openness as a goal still to be actively pursued…". Equalisation of opportunity, equalisation of relative mobility chances among those of different social backgrounds, is his own normative end, his own value commitment, and one which, furthermore, he sees as proper and appropriate to pursue independently of any concern with equality of condition. 1980 is a long time ago, of course, and the other major aspects of his interest in mobility—relating to class formation—perhaps figure less prominently now. But Goldthorpe's own primary value commitment to assessing social structure in terms of the extent to which it allows individuals to achieve their own potentials remains unchanged to the most recent of his writings.

This position is attractive from a straightforward view of fairness. How could the society possibly be considered fair if, systematically, children from privileged backgrounds were more likely to achieve advantaged social positions in adult life than otherwise similar children from unprivileged? But it has shortcomings. "Fulfilling potential" is not a straightforward matter—is there really any "natural" potential to appeal to, when it comes to such matters as employment as a judge or a motor mechanic? And despite Goldthorpe's insistence that his research is entirely "positive" in the sense that he is assessing truth-claims about social

processes[3], the very act of choosing to pursue some truth-claims and not others, implies a distinct and particular view of social justice. If truth-claims about social openness are to be actively investigated on the ground that openness is a goal, while, for example, equality of condition is not to be so considered, there is an unstated, or at least implicit, normative judgement about how to assess the state of society. Like Moliere's well-known member of the 17th century French *grande bourgeoisie*, he has been speaking social justice, though he denies it, all his working life.

The macro-sociological reflection of this focus on realising potential, is the long-standing question associated with the "liberal theory of industrialisation" (or alternatively, as in Goldthorpe 2000 Chapter 11, the "functionalist" theory). An important mid-20th century school of sociological thought (exemplified, with somewhat differing emphases, by Blau 1956, Lipset 1960, Blau and Duncan 1967) held that industrialisation had specific consequences for mobility patterns. Goldthorpe established the investigation of the "liberal theory" as the core concern of his 1980 mobility book, and Ericson and Goldthorpe (1992) review it as an introduction to their magisterial comparative cross-national study of social mobility. Marshall, Swift and Roberts (1997 p38) summarise this review as follows: in advanced industrial societies (as compared to pre-industrial)… "….rates of social mobility are high (with upward movement prevailing over downward mobility); opportunities for mobility are more equal; and both mobility rates and the degree of equality of opportunity tend to increase". These propositions are straightforward, and testable without much more elaboration. The results of the multinational comparative CASMIN project, for example, as set out by Erikson and Goldthorpe, project a notably effective and convincing cross-national generalisation of the propositions first put forward by Goldthorpe *et al* at the turn of the 1980s. As a result, the accepted view both of historical change in Britain, and of the cross-

[3] The insistence on the purely positive status of his work in this area was reiterated in a private communication from John Goldthorpe from late in 2001 (quoted with permission). "I am not concerned to relate empirical results from mobility research to philosophical attempts to establish principles of social justice. I don't really believe in the latter. .... I think that empirical research can be used as a basis for criticising factual assumptions or claims (explicit or implicit) of political arguments, and that is something I'm quite prepared to engage in. But ultimately I see such arguments as turning on value commitments that have no logical connection to factual issues (no bridge between 'ought' and 'is') and as not open to any discursive resolution - only by fighting or voting. So I'm not much interested in 'veils of ignorance' and such-like devices."

national comparisons, is quite unsupportive of the liberal theory. Opportunities for mobility, equality of opportunity, are not found to increase with industrial development, or to be higher in apparently more developed economies.

class categories, human capital and class positions

At the core of the approach taken by Goldthorpe and his colleagues, is the categorical notion of class, developed initially from the Hope-Goldthorpe score, but justified independently through a developing sequence of distinct theoretical arguments (most recently in Goldthorpe 2000 Chapter 10). One consequence of these theoretical developments is for the naming of the classes; the dominant class according to Goldthorpe 1980—where (following Lockwood 1958) the nature of the "work situation", the degree of autonomy or trust involved in the work situation, was the crucial issue—was the "service class"; more recently, the nature of the employment contract has became crucial, and the dominant class became the "salariat", though its constituent elements in terms of occupational positions and employment statuses remained effectively unchanged[4].

There a crucial unclarity in the view that the employment relationship is the essence of class positions. Goldthorpe's own claims are in fact quite limited. He claims that the various groups of occupations in the schema do share the characteristic types of employment relationships specified for them ("criterion validity" as demonstrated by Evans 1992, 1996). And he claims that the groups so constituted are indeed associated with a range of statistical regularities, the various class categories having distinctive life chances, political attitudes, and chances of reproduction in children (Goldthorpe and Marshall 1992). Nothing here suggests that the employment relations must be considered the effective *cause* of the regularities. As regards intergenerational mobility, Goldthorpe himself (2000 pp 243-253) sets out a range of mechanisms through which parents may establish positions for their children (including use of personal contacts and trade networks, transfer of financial or physical capital, cultural and financial support for educational attainment, and so on). But he makes no suggestion that the nature of the parent's employment relationship is itself directly implicated. To the extent that consumption opportunities reflect income from employment rather than wealth, access to that employment is gained through the individual's human capital, and the nature of the

employment contract is again just a *consequence* of the fit between the individual's salient labour market characteristics and prospective employers' requirements (Goldthorpe 2000 pp 213-223). It would be perverse to claim the nature of the employment contract as itself the *cause* of the regularities—and indeed I can find no such claim in Goldthorpe's work. Yet, just such a proposition would be necessary, in order to move forward from Goldthorpe's own statement that the employment relationship is a means of "making class operational in empirical research" (2000b p.206), to any larger claim.

It would surely be more straightforward to say that *the employment relationship is in fact a **consequence** of individuals' access to economically salient resources, and can thus be used as a means for classification*. This procedure does indeed produce a class schema that usefully predicts individuals' membership of groups with similar levels of wealth and human capital (as demonstrated in Gershuny 2002a and 2002b).

And Goldthorpe's own explanation of the centrality of the employment relation specifically in the *operationalisation* of class, could be interpreted in this way, as a pragmatic reflection of a historical contingency, the availability of appropriate empirical evidence at the time of its original formulation. It would be virtually impossible to measure the extent of wealth and human capital, at different points, through a single, relatively brief, individual interview with a "cross-sectional" sample of a population. Wealth and human capital are, however, strongly associated with individuals' tenure of particular occupational categories, which are easily measurable through this sort of survey instrument. So with—in the 1970s—scarce secondary data and funding only for cross-sectional surveys, the most sensible approach for students of social stratification and mobility, was to measure individuals' occupational locations, and then to group the detailed occupational categories into smaller agglomerations, "classes", consisting of people in groups of occupations who could be expected to share various of the crucial characteristics.

What has changed, since the 1970s, is the availability of empirical data appropriate for the direct measurement of the class-type resources. Since that era, household panel studies, administrative data sets, prospective cohort studies, large-scale retrospective life-histories,

[4] Lockwood himself, however, suggests that this renaming is undertaken "to avoid confusion

have proliferated, and one or more of these is available in most developed societies. It now becomes possible, through secondary analysis of these, to construct direct measures of the individual-level access to the class-type resources, wealth, education, work experience and special knowledge. Their distribution across a society give, statistically speaking, differential access to consumption opportunities, and to subjective conditions—such as satisfaction with different domains of activity, happiness, contentment—and to material conditions of health and long life. Their persistence means that they also explain *future* consumption, and subjective and material circumstances. So, if we now measure these resources and understand the processes through which they are transmitted and accumulated over time, we will thereby acquire a more *direct* view of the processes of differentiation of life chances than comes from the employment-relations-based class categories.

The proposal, at the core of the SPLC project, to adopt a "human capital" approach to the measurement of class, is not in fact very far removed from the theoretical foundations of the established British social stratification research paradigm. Goldthorpe originally (1980: p. 39) suggested that class positions reflect *both* labour market characteristics (which I take to correspond to what we now think of as human capital) *and* employment situations (ie the form of regulation of employment); he has subsequently however (2000: Chapter 10 pp 208-209) put much heavier emphasis on the employment relation. My contention (itself quite consistent with Goldthorpe's argument in the latter chapter) is that the employment relationship is itself an outcome of the fit between worker's "human capital" characteristics (general and specific skills and experience) and potential employers' desires to employ these (Gershuny 2002a pp. 20-21). Unlike Goldthorpe, however, I conclude on this basis that the human capital itself, and not the employment relationship, should take priority as the key identifier of social class.

In what follows I deploy an estimate of a human capital score, (in effect an appropriately weighted sum of the values of various characteristics—educational qualifications, skills, aptitudes, general and specific work experiences—salient to individuals' positions in the labour market), but leave the wealth measure aside for the moment. I investigate in turn:

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with the service sector of employment" (Lockwood 1995).

(1) An approach to the "liberal theory" issue through models of intergenerational mobility using categorical measures of position in British society;

(2) An alternative approach to the same issue through models of intergenerational mobility in human capital.

3 Data and measurement issues.

The source of the substantive information used here is the British Household Panel Study (the BHPS), originally consisting of some 5000 households, and 10000 adult respondents, interviewed annually since 1991 (and now, with the low income sub-sample added in wave 7, and subsequently the new Scotland, Wales and Northern Ireland samples, nearly twice as large; Taylor et al 2002) The SPLC project, of which this paper forms a part, uses a "balanced panel" design, a subset of the BHPS sample members including longitudinal respondents from Wave 1 to Wave 9, and also, to avoid biases that might result from class differentials in mortality rates, those who ceased to be respondents between waves 1 and 9 by reason of their death—which reduces the effective sample size to 6500, weighted to reflect the composition of the British population in 1991.

In this paper, however, the intergenerational focus means that we will deal just with human capital. The *reason* for this is a near-absence of any information about BHPS respondents' parents' financial wealth (though the BHPS does also collect annual data on intergenerational inheritance which will allow us, with the passage of time, progressively to correct this shortcoming). There is also a limited and partial *theoretical justification* (argued in more detail in Gershuny 2002b) for this default, based on the observations (1) that human capital is a major source of financial wealth, and (2) that wealth comes most into play as a source of social position (and well-being) only at the end of the working life and during retirement—whereas the focus of what follows is largely on the early- and mid-stages of the working life.

The human capital estimation (described in more detail in Gershuny 2002a pp.22-26) is based on a complex pooled data file which superimposes a series of nine 4-year sequences of BHPS data ending in each of the years 1991 to 1999 (supplementing the early years as appropriate

using the retrospective employment status and occupational history data collected in the 1992 and 1993 BHPS waves). This pooled datafile is used to estimate a "wage equation" which gives the value of various potentially economically salient characteristics (current and previous occupations, monthly employment, un- and non-employment history over the previous 48 months, as well as educational attainment, all interacting in various ways with age), in determining an expected hourly wage rate. The two-stage Heckman regression procedure employed means that the values of the various components are adjusted to take account of the possibility that the values of the various personal characteristics differ between those in and out of employment at the time of interview in each of the nine terminal years of the sequences. The coefficients derived from this estimation can then be used to impute a "human capital score" for every adult BHPS respondent irrespective of their current employment status.

This score is a scalar representation of the value of the individual's embodied economically salient resources. It can be used, for example, as a predictor of respondents' future life chances, to much the same effect, as can the categories of the Goldthope class schema. One important difference between this estimation and the more conventional economists' approach (due to Oaxaca 1973) is that the respondent's sex is not used in the regression stage of the estimation. This has the important implication that the measure can be used to investigate gender in comparison to other status-type differences in processes of human capital accumulation. The individual-level scalar measure has the further advantage that it can be straightforwardly summed (and "equivalised" to account for economies of scale) to produce a household-level scalar measure of position; the consequences of this final step are however not explored in this paper.

The personal characteristics used in the estimation procedure were selected in part on the basis that they relied on data available, not just from the BHPS panel waves, but also from the wave 2 and wave 3 life-course retrospective data. So, using the homogenised longitudinal files constructed by Brendan Halpin (Halpin 1997) it has been possible to impute human capital scores for each year of the adult (aged >19) life of each of the BHPS respondents in the balanced panel.

4 Intergenerational mobility as movement between categorical class positions

Let us start however by considering the logic of the traditional mobility arguments. Table 1 sets out the basic mobility picture, using (life-course retrospective) data from the BHPS, taking respondents' father's class as the origin, and their own class at age 35 as the destination. The table provides altogether simplest general view of changing mobility processes in the UK, with three class categories and six birth cohorts (1970s and subsequent births are excluded as too young to provide an appropriate sample of occupational destinations). It differs in one important respect from many conventional representations of mobility: the "destination" in the table is a class location *at a particular age*, rather than at the date of the survey. Because the BHPS collected the complete retrospective work histories it is possible to establish, for each respondent, class *at any point in the life course*.

Conventional "cross-sectional" sources of mobility data typically provide, in addition to evidence on parental occupational location at a particular time point (frequently "around the time you (respondent) were 14", as in the BHPS), only a very restricted amount of information on the respondent's occupation. This might (as in the case of the Oxford Mobility Study used in Goldthorpe et al 1980) include only occupation at the time of interview, at the first job after completing full-time education, and job ten years after first entry to the labour force. The "destination class", in tables constructed from "current occupation" data is necessarily an amalgam of class positions at a wide range of ages. This would have no effect if mobility only takes place intergenerationally. But there is, as we shall see, in fact a substantial amount of class mobility within the individual life-course. So use of "class-at time of-interview" as the destination class in mobility tables introduces a considerable degree of not-at-all random noise.

It means, in particular, that it is not really appropriate to use "class-at-time-of-interview" evidence from a single cross-sectional survey as a basis for analysis of historical change in mobility patterns—since each successive birth cohort, whose various origin-destination relationships must be compared, provides destination evidence for a progressively younger age-group. Of course, the retrospective data, which in principle allow us to get round this problem by constructing tables for class destinations at specific ages, is only helpful insofar as we can trust the respondents' powers of recall. And we do know that some sorts of

employment related recall data are seriously flawed: unemployment, for example, is seriously under-reported in retrospective studies. Plainly "prospective" studies, with repeated measurements of current circumstances (represented in the UK by the paired NCDS/BCS70 birth cohort studies—and the main panel data from the BHPS—will be more and more useful for this purpose as its longevity increases) are the best basis for studying change in class or occupational mobility patterns. There is however support for the use of retrospective work histories as a not-inappropriate second-best basis for studying mobility (Dex and McCulloch 1997 in the UK). For the moment, we may simply observe that the *other* end of the origin-destination table, in the conventional cross-sectional studies on which this field has been until recently entirely reliant, has accepted equivalent recall data relatively unquestioningly. The father's occupation when the respondent was a child in such studies, is after all necessarily much more distant from the present than that respondent's own occupation at various points in her or his adult life. If retrospective data is acceptable for the distant origin, why should we place more of a question over the much more recent destinations discussed in the following pages? This, at least, is the not-entirely satisfactory basis on which the arguments here will rely.

In Table 1, which takes the destination as class at age 35, men and women are treated together, where usually the sexes are separated (later analyses will look at more disaggregated representations). It is clear that men and women have rather different mobility patterns. But—particularly given the importance given, in the mobility literature, to the size of the overall stock of occupational locations, for which men and women compete on an increasingly equal formal basis—it is nevertheless unclear why single sex mobility tables should ever have been thought to be an appropriate starting point.

Table 1 Intergenerational class transition probabilities by cohort
BHPS wave 1, (from a balanced panel of respondents waves 1-9)
M&F

Destination class age 35:	Salariat	Intermediate class	Working class	
Father's class				*%*
Born in 1910s				
Salariat	0.40	0.37	0.23	*18*
Intermediate class	0.20	0.37	0.43	*21*
Working class	0.10	0.17	0.73	*62*
%	*18*	*25*	*58*	N=239
Born in 1920s				
Salariat	0.44	0.29	0.27	*14*
Intermediate class	0.20	0.35	0.45	*19*
Working class	0.16	0.16	0.68	*67*
%	*20*	*22*	*58*	N=553
Born in 1930s				
Salariat	0.49	0.29	0.22	*11*
Intermediate class	0.30	0.26	0.45	*16*
Working class	0.17	0.18	0.65	*73*
%	*22*	*21*	*57*	N=458
Born in 1940s				
Salariat	0.56	0.26	0.18	*18*
Intermediate class	0.32	0.33	0.36	*18*
Working class	0.20	0.22	0.58	*64*
%	29	24	47	N=569
Born in 1950s				
Salariat	0.61	0.20	0.19	*26*
Intermediate class	0.40	0.29	0.31	*17*
Working class	0.26	0.23	0.50	*57*
%	38	23	39	N=577
Born in 1960s				
Salariat	0.61	0.17	0.22	*30*
Intermediate class	0.31	0.31	0.39	*22*
Working class	0.28	0.25	0.47	*48*
%	39	24	38	N=346

Consider first the transition probabilities for the BHPS respondents with working class fathers for successive birth cohorts in Table 1. The probabilities of entry into the service class by age 35 increases regularly from .10 for the 1910 birth cohort, to .28 for the 1960 birth cohort. This in itself might be thought an appropriate basis for concluding that there has been a degree of increase in openness in Britain over the 20th century. But note:

- There are increases in upward mobility for both of the other two origin classes also….
- ….which in turn reflect changing size of destination classes – the salariat/service class at age 35 apparently more than doubled from 18% to 39% of the total over this period ("apparently" because we must remember that this represents only the surviving members).

The implication of this table depends on exactly what is meant by the liberal theory. The first clause in Marshall, Swift and Roberts' summary quoted above, holding that, in industrialising societies "rates of mobility are high" depends simply on judgement of what is to be considered "high". The second clause to the effect that "opportunities for mobility are more equal" depends on the changing ratio between transition probabilities into particular classes. But the important test derives from the third clause predicting "increasing equality of opportunity". If the sizes of the origin and destination classes remained the same (or even approximately the same), it would be still be reasonable, simply to consider relative transition rates between pairs of classes. If, as is the case here, the size of the most advantaged class is increasing this could be misleading, since transition rates from working-class origins in to the salariat relative to those from salariat origins might be improving, while the odds of maintaining salariat position are still much larger than those of gaining it.

Table 2 Intergenerational transition odds and odds ratios by cohort

M&F	transition odds			Odds ratios relative to father in class 3		
Destination class age 35	Salariat	Inter.	Working	Salariat	Inter.	Working
Father's class						
Born in 1910s						
Salariat	0.65	0.59	0.30	5.75	2.89	0.11
Intermediate class	0.26	0.58	0.75	2.26	2.83	0.28
Working class	0.11	0.20	2.68			
Born in 1920s						
Salariat	0.79	0.42	0.36	4.17	2.16	0.17
Intermediate class	0.25	0.54	0.83	1.31	2.79	0.39
Working class	0.19	0.19	2.13			
Born in 1930s						
Salariat	0.96	0.42	0.28	4.86	1.90	0.15
Intermediate class	0.42	0.35	0.80	2.14	1.57	0.42
Working class	0.20	0.22	1.90			
Born in 1940s						
Salariat	1.30	0.35	0.22	5.04	1.26	0.16
Intermediate class	0.46	0.49	0.55	1.81	1.77	0.40
Working class	0.26	0.27	1.38			
Born in 1950s						
Salariat	1.54	0.25	0.24	4.31	0.82	0.24
Intermediate class	0.67	0.41	0.45	1.88	1.33	0.44
Working class	0.36	0.30	1.01			
Born in 1960s						
Salariat	1.56	0.21	0.28	3.95	0.63	0.32
Intermediate class	0.44	0.44	0.63	1.12	1.35	0.71
Working class	0.39	0.33	0.89			

Hence, it is argued that we need to consider, not transition probability ratios, but odds ratios, which take appropriate account of the changing relative sizes of the classes for successive

cohorts. Remember that the first two birth cohorts in Table 2, consisting of people aged in their 70s and 80s in 1993 when the data were collected, are the most subject to systematic selection bias (given class differentials in mortality rates). On this basis, we might interpret the sequence of odds ratios from the 1930s—with the relative chances of upwards mobility from the working class into the salariat increasing, and also with a non-trivial increase in relative chances of downwards mobility from salariat origins to working class destinations—as positive support for the liberal theory. Table 2 suggests an increasing degree of equality of opportunity for successive cohorts of 35-year-old Britons, at least from the 1940s to the 1960s.

Note the strong ordering of the successive cohorts' odds ratios of transition into class 1 and class 2 relative to class 3. The odds ratios are always higher for transitions from the working class into class 1 than into class 2, always lower for transitions from the salariat into the working class than from the intermediate class into the working class. So not much information is lost if we concentrate just on the first of the pairs of lines of odds ratios for birth cohorts, considering the relative odds of transition into each destination class for those with fathers in classes 1 and 3. This allows us to construct a compact table showing how the odd ratios for successive birth cohorts change at various ages.

Table 3 Odds ratios, father in salariat relative to father in working class, by age and cohort

	men and women						men only					
	destination salariat						destination salariat					
at age…	25	30	35	40	45	50	25	30	35	40	45	50
born 10s	4.86	3.41	5.75	4.33	5.18	3.96	17.23	8.56	5.75	10.36	9.85	7.45
born 20s	3.28	3.07	4.17	5.33	6.29	4.84	3.31	3.63	4.17	4.39	4.79	4.83
born 30s	3.13	5.40	4.86	6.74	4.74	3.89	3.73	6.35	4.86	6.09	5.69	5.13
born 40s	4.98	4.54	5.04	5.64	5.76	4.80	5.48	6.00	5.04	9.81	12.61	7.27
born 50s	4.32	4.28	4.31	3.90	*3.96*		5.51	5.06	4.31	4.85	*4.95*	
born 60s	2.41	2.55	*3.95*				2.45	3.13	*3.95*			
born 70s	*5.69*						*5.53*					
	destination intermediate class						destination intermediate class					
at age…	25	30	35	40	45	50	25	30	35	40	45	50
born 10s	4.95	3.48	2.89	2.36	2.80	3.97	3.18	3.77	2.89	1.48	1.65	2.26
born 20s	2.78	2.62	2.16	1.98	1.80	1.80	2.64	1.81	2.16	1.23	1.36	1.18
born 30s	2.71	1.99	1.90	1.16	1.39	1.46	2.47	2.11	1.90	1.55	1.30	1.04
born 40s	1.43	1.13	1.26	0.79	0.68	0.62	1.56	1.09	1.26	0.85	0.27	0.44
born 50s	1.35	0.92	0.82	0.70	0.87		1.14	0.94	0.82	0.68	*0.56*	
born 60s	1.05	0.91	*0.63*				1.29	0.82	*0.63*			
born 70s	*1.34*						*2.07*					
	destination working class						destination working class					
at age…	25	30	35	40	45	50	25	30	35	40	45	50
born 10s	0.12	0.17	0.11	0.16	0.11	0.09	0.09	0.13	0.11	0.12	0.10	0.10
born 20s	0.19	0.20	0.17	0.14	0.13	0.16	0.24	0.24	0.17	0.25	0.21	0.22
born 30s	0.19	0.15	0.15	0.13	0.16	0.16	0.21	0.14	0.15	0.12	0.13	0.17
born 40s	0.19	0.23	0.16	0.18	0.17	0.23	0.18	0.16	0.16	0.05	0.10	0.16
born 50s	0.21	0.26	0.24	0.29	*0.25*		0.21	0.21	0.24	0.21	*0.24*	
born 60s	0.42	0.40	*0.32*				0.39	0.35	*0.32*			
born 70s	*0.15*						*0.16*					

The triangle of vacant cells at the bottom right-hand corner of each panel of Table 3 reflects ages not attained by particular cohorts by 1999. The italic figures (for age 25 for the 70s birth cohort, 35 for the 60s cohort and 45 for the 50s, reflect incomplete cells representing only the earlier half of the cohort. The reduced-size characters reflect evidence substantially subject to selection bias (the 1910 and 1920s birth cohort rows because of class differences in survival rates, and the age 25 column because of historical changes in age of first entry into particular occupations).

The left-hand panel of the table, for men and women together, shows straightforwardly:

- a consistent pattern of decline, from 1940s at least, in the odds ratios of salariat destination for those of salariat-origin relative to working class origin,
- and a similarly consistent increase in odds ratios of working class destinations for those of salariat origin relative to working class—ie a substantial increase in downward mobility.

There is still considerable inequality of opportunity in this representation of social mobility in Britain. The two opposing sets of odd-ratios in the first and third panels of Table 3 are

respectively still in greatly in excess of unity and substantially less than unity. But there is apparently consistent change, in the direction required by the liberal theory. The right-hand panel shows the equivalent results for men alone—which leads to pretty much the same conclusion, a modest but clear increase in equality of opportunity from the 1940s birth cohort onwards.

Are the increases in mobility chances in the table statistically significant? The conventional approach to testing significance in mobility tables has been to use loglinear models. It is not however clear why nowadays we should not use the more flexible techniques for regression-type modelling of polyvalent dependent variables. Here we have three social classes in a clear mutual hierarchical relationship in terms of the economic advantages attached to them; why not, for example, use ordered logistic or ordered probit modelling approaches? Indeed, in the present case, an even simpler approach is called for. The question is simply whether the relative odds of arriving in service class have changed over the period, so we can use a straightforward binary logistic regression approach. Table 4 gives the relative log odds of arrival in the service class at various ages, taking as the default category against which other cases are compared, those in 1920s cohort with a father in the working class (birth cohorts previous to the 1920s, and those born in the 1970s, are excluded). Its coefficients show the log odds of service class destinations for those in other cohorts and with fathers in the two hierarchically more advantaged classes, relative to the default group.

The results are reasonably clear. Both for men and women together (which is my preferred way of doing the analysis), and for men alone, the three birth cohorts from 1940 show regular and significant declines in the relative advantages to having fathers in the service class. Not significant, and not quite so regular, fathers in the intermediate class seem also to provide a declining advantage (it seems likely that with a larger sample—which could be achieved by "semi-pooling" of age groups discussed in a later section—these effects would also become statistically significant.) This raises the question of why mobility advantages appear to be much less unequal for the 1930s birth cohort. We might speculate that this reflects a short term-consequence of the particularly rapid expansion of service-class jobs through the later 1950s and 1960s, which provided extra mobility spaces, but only until the slightly lagged expansion of the higher education system "caught up". Thereafter, to continue the speculation, there was a return to a previous trend of rather slower expansion of equality of

opportunities. (We shall not pursue these issues further here, however, and will in the following sections turn instead to consider alternative classifiers of social position.)

Table 4. Relative log odds of transition into the service class.
default category: born in 1920s, father working class

Men and women						
Age	25	30	35	40	45	50
Model -2 Log Likelihood	*2891*	*3041*	*2834*	*2485*	*2131*	*1721*
Change in –2 LL as result of model	*167*	*200*	*190*	*203*	*184*	*130*
*Pseudo R**2*	*0.055*	*0.062*	*0.063*	*0.076*	*0.08*	*0.07*
born in 1930s	0.489 *	-0.015	0.156	0.521 **	0.602 **	0.658 **
born in 1940s	0.604 **	0.357 *	0.418 *	0.767 **	1.126 **	0.973 **
born in 1950s	0.823 **	0.629 **	0.786 **	1.161 **	1.126 **	
born in 1960s	1.115 **	0.985 **	0.913 **			
20s cohort* father service class	1.823 **	1.559 **	1.960 **	2.383 **	2.259 **	2.185 **
30s cohort* father service class	0.866	1.072 *	1.355 **	1.444 **	1.369 **	1.285 **
40s cohort* father service class	1.570 **	1.662 **	1.625 **	1.857 **	2.068 **	1.916 **
50s cohort* father service class	1.206 **	1.273 **	1.386 **	1.389 **	1.528 **	
60s cohort* father service class	1.007 **	1.069 **	1.178 **			
20s cohort* father intermed class	0.457	0.241	0.207	0.507	0.701 *	0.525 *
30s cohort* father intermed class	0.694 *	0.464	0.595 *	0.416	0.359	0.374
40s cohort* father intermed class	0.481	0.213	0.393	0.498 *	0.298	0.204
50s cohort* father intermed class	0.143	0.269	0.385	0.188	0.192	
60s cohort* father intermed class	0.053	0.014	-0.142			
Constant	-2.105 **	-1.641 **	-1.582 **	-1.794 **	-1.836 **	-1.688 **
Men only						
Age	25	30	35	40	45	50
Model -2 Log Likelihood	*1722*	*1950*	*1824*	*1566*	*1309*	*1041*
Change in –2 LL as result of model	*90*	*122*	*105*	*115*	*105*	*64*
*Pseudo R**2*	*0.050*	*0.059*	*0.054*	*0.069*	*0.075*	*0.058*
born in 1930s	0.526	0.009	0.197 **	0.448 *	0.538 *	0.528 *
born in 1940s	0.687 *	0.411	0.409 *	0.662 **	0.969 **	0.824 **
born in 1950s	0.801 **	0.577 *	0.790 **	1.014 **	0.936 **	
born in 1960s	1.037 **	0.901 **	0.646 **			
20s cohort* father service class	1.839 **	1.534 **	1.580 **	1.904 **	1.908 **	2.112 **
30s cohort* father service class	0.851	1.023	0.981	0.835	1.313 *	1.441 *
40s cohort* father service class	1.763 **	2.085 **	1.739 **	2.075 **	2.450 **	2.048 **
50s cohort* father service class	1.329 **	1.423 **	1.516 **	1.649 **	1.671 **	
60s cohort* father service class	0.993 **	1.060 **	1.315 **			
20s cohort* father intermed class	0.595	0.452	0.484	0.805 *	0.926 **	0.582
30s cohort* father intermed class	0.671	0.029	0.215	-0.058	-0.05	0.218
40s cohort* father intermed class	0.404	0.326	0.413	0.552	0.556	0.395
50s cohort* father intermed class	0.332	0.459	0.298	0.367	0.676	
60s cohort* father intermed class	-0.021	-0.203	-0.032			
Constant	-2.137 **	-1.558 **	-1.404 **	-1.509 **	-1.513* *	-1.399 **

But before we move on it is worth saying that, though this is not a familiar result, nor is it entirely unfamiliar. We may indeed have noticed something very like it, albeit fleetingly, in Goldthorpe, Payne and Llewellyn's initial analysis of the Oxford Mobility Study data. That study had occupational destinations at three alternative points in the life-course—at the time of the first job, the job ten years after first job, and current job at the time of interview.

Origin/destination tables were produced with each of these. Their Table 3.4 (p.78), which describes the fathers' origin/10-years-after first-job destination transitions, shows a similar substantial and regular inter-cohort fall in the odds ratios for entry into the salariat (in fact it uses *relative* odds ratios—in this case the ratio of the first to the third panels of my Table 3). But by contrast their Table 3.5, which summarises the transition between father's class and current class shows no such change, but rather a small and irregular increase in the ratios. Which result should be considered more representative? Goldthorpe et al (in the context of the subsequent loglinear modelling results) say that "…the intergenerational transition that may be taken as ultimately of greatest importance, (is) that to the stage of occupational maturity…" (my parenthesis) —ie the transition from father to class at time of interview— should be given priority.

The problem of course is that, unlike the almost fixed-age ten-years-after-entering-workforce destinations, time-of-interview destinations have systematically different age distributions for the successive cohorts. Thus the latter certainly does not tell us anything straightforward about "occupational maturity". If mobility continues through the life-course then, ceteris paribus, we would expect more mobility from fathers to their sons when old than from fathers to their sons when young. So the transition to class-at-time-of-interview tables do not compare like with like, and thus, on the contrary, we should take the Goldthorpe et al transition-to-class-after-ten-years results – which show increasing equality of opportunity corresponding to Tables 3 and 4 above.

4 mobility among human capital quintiles

The human capital measure was designed, *inter alia* so that it can also be estimated using the information contained in the same work history data files used to construct the life-course sequence of Goldthorpe class locations. The effect of doing so is to impose constant 1990s values of the various component characteristics throughout the century. This is of course not historically accurate, and for other purposes the coefficients in such analysis might be varied systematically to take account of earlier contemporaneous data (eg, from the 1970s, using the New Earnings Survey). But for present purposes, these constant values are appropriate. A

fixed base for summarising a mix of economically salient resources as a single scalar quantity, simplifies the process of historical comparison.

We do not however have sufficient information about their work history data to estimate respondents' fathers' human capital directly. We only know their occupation and employment status, not the detailed education and recent work history necessary for a full human capital attribution. But can use the BHPS panel data as the basis for an imputation. There are some 5000 BHPS respondent/years, over the first 9 waves, with respondents who are co-resident with their own children aged between 12 and 15. A regression model using the (2-digit) occupational categories to predict the human capital measure for this group gives a correlation well in excess of .9. So they provide appropriate basis for imputing father's human capital. The result of a straightforward imputation on this basis is to reduce the variability of the origin rows in the mobility table much below its real level. But nevertheless it provides much more variability in the independent variables of the regression equation, than is present in 3, 7 or 11 class categories.

What follows therefore is a straightforward replacement of the categorical class-origin / class-destination analysis, with an analogous human-capital-of-parent-quantile / human-capital-of-child-quantile origin-destination model.

It appears that, at least for those cohorts and ages not substantially affected by selection biases of various sorts, there is a clear difference in the evolution of human capital for the salariat and intermediate classes relative to the working class. For the former, mean human capital seems to increase, with each successive cohort, for most ages through the life course, while for the latter, human capital stays relatively unchanged. Figures 1 and 2 set estimates of mean age/cohort human capital against its 1930 birth-cohort level for men in successive age groups. In Figure 1 we see that, for each age, and with only one exception, each successive cohort of salariat members has a progressively higher mean human capital score. Figure 2 shows that successive cohorts of working class sample members have a much less regular and substantial growth in human capital. Essentially the same contrast also emerges from similar calculations from the combined men's and women's totals. Mean human capital scores in the salariat (and also in the intermediate class) have been rising substantially from the 1930s.

Mean human capital scores for members of the working class have not risen to the same degree. (Note also the rising mean score of the fathers of this group.)

Figure 1. men's changing mean human capital: salariat

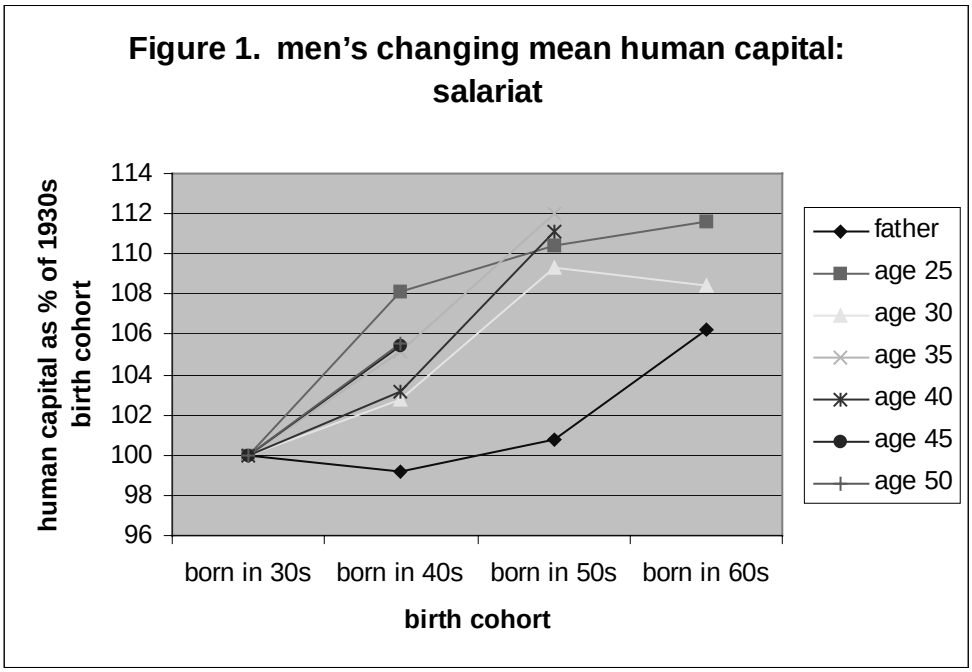
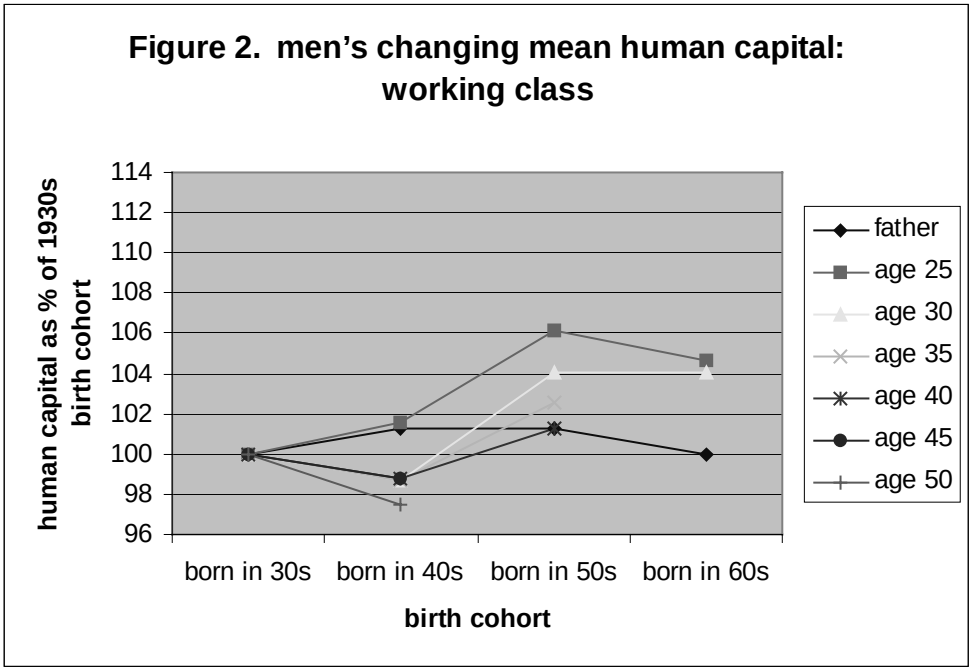


Figure 2. men's changing mean human capital: working class



Now we can move to a categorical model of intergenerational transition based on the human capital measure. We can reduce the scalar human capital values to nominal categories, quintiles, and then calculate odds ratios for transitions between, for example, fathers' membership of the bottom 20% of the human capital distributions, and their children's membership of the top 20% of the human capital distributions for particular birth cohorts and

ages. (In fact, since in this case the origin and destination groups are by definition the same size, we do really not need to use odds ratios, but could instead look directly at the changing relative transition probabilities between the two groups.)

Table 5. Relative log odds of transition into top human capital quintile
default category: born in 1920s, father bottom human capital quintile

M&F						
age	25	30	35	40	45	50
-2 Log L	*4216*	*4104*	*3646*	*3118*	*2706*	*2249*
Improvem	*118*	*120*	*95*	*88*	*70*	*67*
*Pseud R**2*	*0.027*	*0.028*	*0.025*	*0.028*	*0.025*	*0.029*
born in 1930s	0.186	-0.098	-0.250	-0.013	0.191	0.314
born in 1940s	0.049	-0.295	-0.613	-0.137	-0.065	-0.085
born in 1950s	0.294	-0.033	-0.114	-0.036	0.492	
born in 1960s	-0.309	-0.472	-1.004 *			
20s cohort* father top quintile	1.184 **	1.021 **	0.963 **	1.207 **	1.284 **	1.384 **
30s cohort* father top quintile	0.802 *	0.790 *	0.719 *	0.995 **	0.856 *	0.903 **
40s cohort* father top quintile	1.217 **	1.371 **	1.420 **	1.340 **	1.418 **	1.591 **
50s cohort* father top quintile	1.154 **	1.378 **	1.093 **	1.480 **	0.828	
60s cohort* father top quintile	1.659 **	1.512 **	1.976 **			
20s cohort* father intermed quintile	0.615 *	0.245	0.083	0.426	0.500 *	0.609 *
30s cohort* father intermed quintile	0.435	0.586 *	0.495	0.559	0.381	0.310
40s cohort* father intermed quintile	0.532 *	0.683 *	0.845 **	0.633 *	0.555 *	0.683 *
50s cohort* father intermed quintile	0.095	0.198	0.153	0.420	-0.104	
60s cohort* father intermed quintile	0.883 **	0.887 **	1.215 *			
Constant	-2.022 **	-1.816 **	-1.626 **	-1.948 **	-1.992 **	-2.101 **
men only						
age	25	30	35	40	45	50
-2 Log L	*2066*	*1978*	*1770*	*1513*	*1295*	*1076*
Model Ch	*44*	*76*	*53*	*56*	*40*	*43*
*pseud R**2*	*0.021*	*0.037*	*0.029*	*0.035*	*0.03*	*0.039*
born in 1930s	0.554	0.666	0.384	0.384	0.674	0.329
born in 1940s	-0.291	-0.199	-0.285	-0.420	0.175	-0.585
born in 1950s	0.078	0.318	0.061	-0.077	0.740	
born in 1960s	-0.171	-0.507	-0.215			
20s cohort* father top quintile	1.057 *	1.402 *	1.224 **	1.224 *	1.507 **	1.387 **
30s cohort* father top quintile	0.051	0.488	0.719	0.789	0.72	0.863 *
40s cohort* father top quintile	1.359 **	1.805 **	1.835 **	2.107 **	1.637 **	2.253 **
50s cohort* father top quintile	1.368 **	1.472 **	1.420 **	1.643 **	0.661	
60s cohort* father top quintile	1.238 **	2.149 **	1.533 *			
20s cohort* father intermed quintile	0.542	0.848	0.671	0.657	0.825 *	0.557
30s cohort* father intermed quintile	-0.01	0.098	0.208	0.188	-0.011	0.136
40s cohort* father intermed quintile	0.887 *	1.028	0.904 *	1.021 *	0.556	1.127 *
50s cohort* father intermed quintile	0.333	0.303	0.500	0.610	-0.083	
60s cohort* father intermed quintile	0.703 *	1.306	0.792			
Constant	-1.945 **	-2.23	-2.061 **	-2.061 **	-2.23 **	-2.024 **

Table 5 uses the same logistic modelling procedure as in Table 4, collapsing the three intermediate origin quintiles into a single category. I had expected, on the basis of the reasonably high levels of association between the Goldthorpe class and human capital scores,

that this analysis would exhibit the same declining trend as those reported in Tables 3 and 4, indicating increasing openness. But the log odds ratios for successive birth cohorts in Table 5 move, if anything, and for the both-sexes case, in the other direction. Table 5 is drawn from the same data set, and indeed uses the same occupational variables as Table 4, yet shows that relative mobility chances of entry to higher levels in the society has not in fact been increasing. There are two sorts of differences between the two tables. Table 5 includes the whole sample, as opposed to Table 4 which includes only those in employment at the target ages. And Table 5 has quintile categories (ie fixed proportions of the samples) where in Table 4 the proportions in the classes vary, and to a different extent in each cohort, between parents and children.

The latter of the features is the probable explanation for the difference (this issue is explored further in the companion paper Gershuny 2002c). Mobility into the salariat as a whole, whose size is growing, may be easing, but entry into a fixed proportion of the most privileged members of the society from less privileged origins nevertheless becomes increasingly difficult, or at least gets no easier to achieve.

5 Mobility as inter-cohort change in life-chances

Of course, in the most general sense the resources which establish the social positional characteristics which constitute class include financial wealth as well as human capital. But, at least holding issues of simple luck on one side (though this may well be differentially distributed along class lines), the orderly reproduction of financial capital is more implicated in immobility rather than mobility, and we might expect the main mechanism for mobility in any society to be the accumulation of human capital. This does not equate entirely with the accumulation of educational qualifications: it may as well be the interaction of intergenerationally transmitted skills and acquired job-specific knowledge (as in the 1980s case of the City of London bond-dealing children of vegetable market traders); or it may be the spontaneous acquisition of new technical knowledge as in Adam Smith's or Samuel Smiles' tales of workers' innovations in production processes based on careful thought and close observation of their own work practices; or of informed guesses about potential markets for innovative products—as well as to the accelerated accumulation of skills through

special assiduity in the school or the workplace. But in each case, upward mobility requires the acquisition of new knowledge or skills over-and-above those associated with the regular age-related changes necessary for the maintenance of the individual's previous social position (correspondingly, downward mobility comes from the loss of these through ill-fortune or idleness).

In an intergenerational context, the focus of mobility research should therefore be on the degree of association between the parents' human capital and their children's (in what follows, however, I use just father's human capital as the origin). The simplest and most straightforward approach is simply to consider mean changes between the fathers' and children's human capital. Examples of the findings from these sorts of exploratory analysis (which are not reported elsewhere in this paper) are as follows:

1 There is some increase in human capital over time for all groups.

2 The increase is larger for those whose fathers have higher levels of human capital

3 Inter-cohort increases in human capital are larger for women—those in successive cohorts are in effect catching up over time with their brothers.

4 Father's human capital levels seem to have a larger positive effect for daughters than for sons.

Respondents with fathers in the bottom quintile have on average higher human capital than their fathers (men), or approximately the same (women), while those with fathers in the top quintile have substantially lower human capital than their fathers. This might be interpreted as a sort of "regression to the mean" result. We should note however that regression to the mean may refer to either (a) error processes related to the estimation of the variables and the relationships between them, or (b) a genuine behavioural process in which extreme values in one generation tend towards the mean for the population in the subsequent generations. The main sources of error in the present analysis concern the imputation of fathers' human capital scores. There is nothing to suggest that the scale or distribution of errors from this source should differ systematically between older and younger BHPS respondents. So, in what

follows, any regression-to-the-mean-type effects connected with inter-cohort differences are considered as type b effects.

This intermediate analysis gives us clues as to the nature of the mobility processes, and into their change over time. We might consider the four numbered points as loosely specified hypotheses, which we can use to provide a structure for the construction of the regression model.

Table 6 Models of mobility, BHPS work history respondents in the balanced sample (* p<.05; ** p<.005)

dependent variable = respondent's human capital at age 30;
BHPS sample born 1930-1969 N=3201

model	1	2	3	4	5
MultiR	*0.500*	*0.501*	*0.502*	*0.503*	*0.509*
AdjusR Square	*0.249*	*0.250*	*0.251*	*0.251*	*0.257*
woman (0,1)	-2.371 **	-2.370 **	-2.366 *	-2.834 **	0.629
cohort (1930=3 to 1960=6)	0.338 **	1.011 *	0.821 *	0.807	1.806 **
cohort**2		-0.074	-0.088 *	-0.087	-0.216 **
woman*cohort					-1.934 *
woman*(cohort**2)					0.251 **
father's human capital	0.235 **	0.235 **	0.069	0.040	0.054
father's humcap*cohort			0.347 *	0.353 *	0.347 *
father's humcap*woman				0.505	0.319
(Constant)	4.723 **	3.281 **	4.509 *	4.787 **	2.964 *

Table 6 sets out the steps towards the construction of the very simple model adopted for the rest of this paper. *Model 1,* including just sex (m=0, f=1), cohort (coded 3 for 1930-39 births, 4 for 1940-49 and so on), and father's human capital; it provides the most basic view of gender, historical change and intergenerational mobility. We see (from the cohort term), as we might expect, that human capital increases with successive cohorts as proposed in hypothesis 1 (though this effect emerges as more complex once we add in appropriate interactions). Women have lower human capital. The positive sign on the father's human capital coefficient tells us that fathers' resources are to some degree transmitted to their children. All three effects are significant at the .005 level.

This first model is not however sufficient to test the full set of hypotheses. We need to release the constraints to allow some curvilinear effects, and some interactions between the terms. *Model 2* simply adds a squared term for the cohort: the fact this is negative while the simple cohort term remains positive, tells us that the initially positive sloping curve progressively bends downwards – that the overall rate of increase in human capital slows

through the four birth decades considered in this exercise. Note that the squared effect here is not statistically significant; this (as we shall see in a moment) tells us that the model is not yet correctly specified.

Model 3 adds-in an interaction between father's human capital and cohort. This term is significant (though only at the .05 level), while the simple father's human capital term becomes insignificant. So, consistent with hypothesis 2, the effect of the father's human capital is increasing in successive cohorts. *Model 4* adds the interaction between the father's human capital and sex -- though the coefficient is statistically insignificant, this is consistent with the hypothesis 4 proposal of an increasing effect of father's human capital for daughters relative to that for their brothers. One consequence of the addition of this term is that the two cohort terms become insignificant. This does not in fact mean that there is no significant cohort effect however, but only that the previous models confused the historical growth in human capital overall, with the increasing effect of father's human capital for their children, and for daughters in particular. We see this clearly when, in *Model 5* we add in the final pair of terms representing the interaction between birth cohort and gender effects. The upward-bending curve produced by these two terms tells us that—quite independent of the effect of father's human capital—while the rate of increase of men's human capital is slowing, over the successive cohorts, that of the women's is accelerating (ie hypothesis 3). The fact that the addition of these terms also makes the simple and quadratic cohort terms significant again, suggests that this is now a correct specification.

Model 5, which is the basic mobility model used in the remainder of this paper, includes all three of the 2-way interactions among sex, cohort and fathers' human capital score; the single possible 3-way interaction actually reduces the adjusted proportion of variance explained, lowers the significance values of the other variables, renders straightforward interpretation very difficult—and is therefore not included[5].

[5] The model as specified here includes quadratic terms, but not cubic; these have been examined (with an equivalent version of the model using respondent birth year rather than birth cohort to provide the requisite levels of variation), and found to present problems of interpretation and presentation without adding significantly to the substantive analysis. A quadratic term for the father's human capital interaction with cohort was also considered, but this failed to pass a significance test even with the larger numbers in the "semi-pooled" analysis discussed in the next section.)

Model 5 describes changes in inter-generational mobility processes in the UK in a notably succinct and parsimonious manner. The simple hypotheses can be evaluated by straightforward inspection of the coefficients of the model. With the same initial data, it yields more information than does the categorical modeling set out in previous sections of this paper. It allows us to compare the scale of advantages or disadvantages accruing to people from different backgrounds, allowing us to make statements of the nature of "each unit of paternal human capital produces a predicted extra human capital score of so much", where the previous categorical analysis by contrast allowed us only to refer to differential advantage in an ordinal manner, "increasing relative chances of mobility into a relatively privileged position".

6 Intergenerational human capital mobility through the working life.

So far we have a mobility model just for class destination at age 30. It would be possible in principle to move on from Model 5 in Table 6, which has the destination social-class-at-one-age as the dependent variable, to construct a just slightly more general model with social class as the dependent variable, and age-of-measurement-of-destination-class as an additional independent variable. In this case we would work with a "pooled" file, in which each respondent appears multiple times, once for each year of her or his age. But the "censoring" problem that arises from the logical impossibility of observations for the older-age experiences of respondents from the more recent age-groups poses econometric complications that would prevent the use of OLS regression in the estimation. And the model would in any case be somewhat less straightforward to interpret[6].

We could consider a simpler, if potentially somewhat cumbersome, alternative of estimating multiple models, with an identical list of right-hand variables, for the destination social class at various successive ages (25, 30, 35 and so on). But this approach fails to make comprehensive use of all the available information (why not use the data from ages 26, 27

[6] Nevertheless a "fixed effects" model will be considered for inclusion in an additional section in a later version of this paper.

and so on?). An alternative approach, whose results are set out in Table 7, comes from what we might think of as a *semi*-pooled approached. We still estimate multiple regression equations relating to the different life stages. But, since each of the equations now relate to a narrow 5-year age band, each respondent appears just five times, once for each year within the period covered by the equation. The censoring problem is now minimal, since the range of ages is small relative to the period over which censoring takes place, and an additional term is included to indicate the general effect of the age variation within the 5-year period. The number of cases is larger—though, since these are not strictly independent cases the significance estimation is somewhat over-generous[7]—and as a result the estimates are more stable.

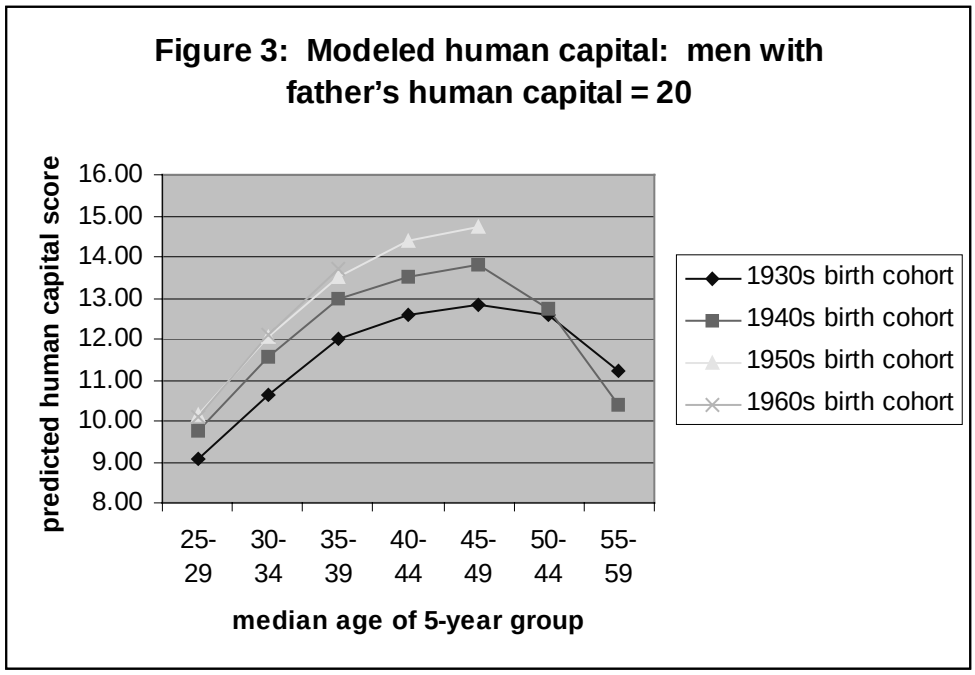
Table 7. Human capital mobility models through the lifecourse: grouped ages
(* p<.05; ** p<.005) (see semipool.xls, and intgntb1.xls)
dependent variable = respondent's human capital for each age group; BHPS sample born 1930-1969

Human capital at age	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-44**	**55-59**
MultiR	*0.479*	*0.506*	*0.503*	*0.475*	*0.459*	*0.454*	*0.451*
AdjusR Square	*0.229*	*0.256*	*0.253*	*0.225*	*0.210*	*0.206*	*0.202*
N	22119	20494	17110	13628	10619	7432	4645
woman (0,1)	0.891	0.843	-1.020	-6.401 **	-7.285 **	-2.866 **	-2.619 **
cohort (1930=3 to 1960=6)	1.631 **	1.916 **	1.889 **	0.492 **	0.424		
cohort**2	-0.181 **	-0.214 **	-0.193 **	-0.024 **	-0.012	0.089 *	0.083
woman*cohort	-1.675 **	-1.897 **	-0.842	1.931 *	2.577 *		
woman*(cohort**2)	0.206 **	0.238 **	0.103	-0.258 *	-0.366 *	-0.009	-0.018
father's human capital	0.104 **	0.134 **	0.212 **	0.185 **	0.207 *	0.390 **	0.490 **
father's humcap*cohort	0.173 **	0.253 **	0.202 *	0.307 *	0.311	-0.252	-0.728 *
father's humcap*sex	0.342 **	-0.094	-0.478 **	-0.126	-0.033	0.310	0.551
extra year (yr1=-2,2=-1 etc)	0.154 **	0.147 **	0.128 **	0.067 **	-0.030	-0.152 **	-0.190 **
(Constant)	2.670 **	2.612 **	2.636 **	5.777 **	5.663 **	5.529 **	5.059 **

We can read amplifications of some of the hypotheses directly from the coefficients without any further arithmetic. We might note in particular the generally growing size of the *father's human capital* term through the life-course: this implies, for all cohorts, a rather flat age profile for the predicted human capital of those with low human capital fathers, but a substantial increase in human capital during the (first part of the) working life-course of those with fathers with high levels of human capital. There is also a general increase during the first part of the life-course in the effect of the *interaction between the father's human capital and the birth cohort*, though this is reversed for those age above 50. The father's human capital*sex interaction changes sign in mid-life course, indicating an initially positive effect

[7] It may be helpful to calculate some form of design effect statistic here.

from father's own resources, followed perhaps by an "advantageous" marriage encouraging a temporary exit from the labour force.



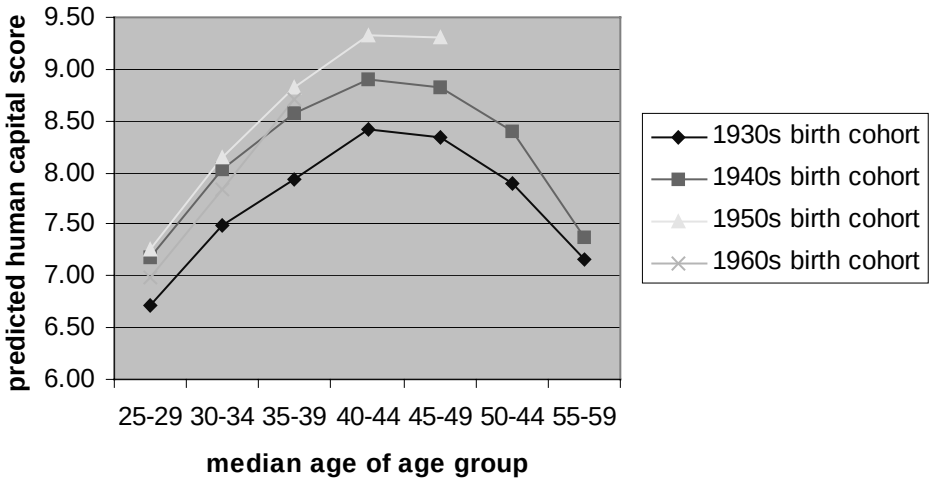
The effects of the interactions, and combinations among the coefficients, are quite complex. To take the discussion further, we will need to instantiate these models. The first task is simply to show what Table 7 tells us about predicted human capital levels. The human capital effects are continuous and "well behaved", as mathematicians say, in that, at any age and for any given combination of values of the other variates, the higher the father's human capital, the higher the child's. So instantiations of the equations using extreme values for fathers' human capital (ie respectively low and high in relation to the actual distributions in the population) provide good guides for what lies between. Thus Figures 3 and 4 show the Table 7 models' predicted values for men with fathers with human capital scores of 20 (an extreme value corresponding to the 1990s score for a top professional or senior manager in a large corporation) and 5 (a human capital score of 5 corresponds, for example, to that of a low skilled manual worker with an insecure recent employment history). Figures 5 and 6 provide the equivalent estimates for women.

Figure 3 instantiates the seven separate age relationships in Table 7, for hypothetical men born in each decade, with fathers with a human capital score of 20. The pattern exhibits in its general shape, what we would straightforwardly expect any historical sequence of plots of the life-course evolution of work-related skills to show us: for each cohort, the expected

financial returns for labour increase to a high point in middle age and decline thereafter. The Figure 3 plot based on the 5-year age-groups in Table 7 shows the highest point on the curve to be at mean age 47.

We can see that in these cases the father's human capital score is not reproduced in the sons. At its peak the 1960s cohort is still a modeled 5 units below their fathers level. This is clearly a "regression" effect and we cannot say *a priori* how much of it is type a error, and how much is genuine type b behaviour. However each successive cohort has at each age a higher predicted human capital score. These increments are not at all explicable in terms of error processes (since these are expected to be constant across the cohorts), and hence reflect genuine change. So we may conclude that high-human-capital fathers have been *increasingly* successful in passing on their human capital to their sons.

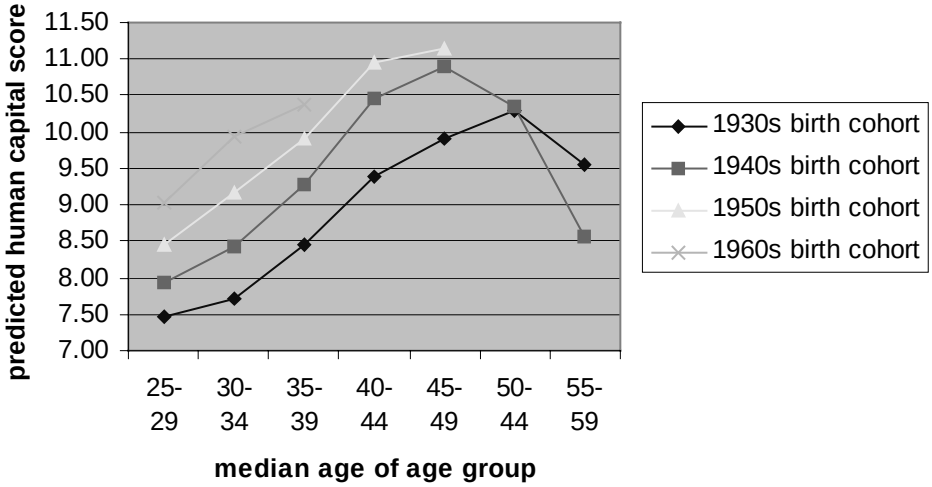
Figure 4 Modeled human capital: men with father's human capital = 5



Now compare these patterns with those of the sons of low human capital fathers shown in Figure 4. Some aspects are similar: there is again an inverted-U shaped age distribution; and again upwards shifts in the successive birth cohorts. The base-levels at age 25 are not too dissimilar to those in the previous figure; again a "regression" effect—here the young adult sons already have a higher mean score than their fathers' at a mid point of their working lives. But the inverted-U shape is much flatter in this case, with a gap, in mid-life-course, between the first and last cohort in the figure, of around 1.5 to 2 units, where the Figure 3 equivalent was increasing, between these two cohorts, from around 3 to 3.5 units. Here the levels of the

1960s birth cohort are actually lower than the 1950s. The absolute size of the gap between these two groups, in short, is increasing.

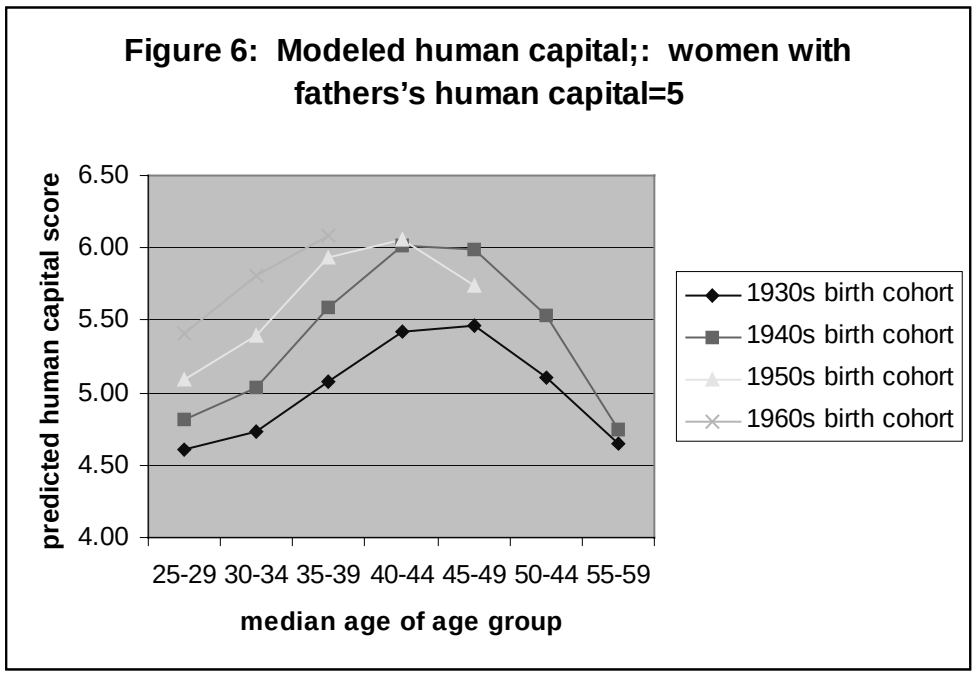
Figure 5: Modeled human capital: women with father's human capital = 20



The pattern for the daughters of high-human-capital fathers shown in Figure 5 is different again: the inverted-U shape is flatter than for their notional brothers (in terms of the arithmetic of the model, the result of the negative father's-humcap*sex term remarked on in the previous section), even though the inter-cohort differences are a little larger for this group than for men with an equivalent background. There is in all but the most recent cohort, a concavity in the first half of the working life which recurs in a more definite form for the daughters of low human capital fathers in illustrated in Figure 6.

Here what we see is no longer best described as an inverted-U, but rather, at least in the earliest cohort, hints at what Angela Dale has described as the "M-shaped" age distribution characteristic of women's participation in paid work. This group of women has remained relatively low in average educational attainment, so their human capital level is particularly strongly influenced by their recent work experience. Women enter the paid workforce, but then leave it again in their early- to mid-20s, in the earlier part of the twentieth century at the time of marriage, subsequently with the birth of children. Throughout the last half of the century, the rates of leaving the workforce declined, and the rate of return to paid employment as their children become relatively independent has increased. For the earlier birth cohorts

illustrated in Figures 5 and 6, this early- to mid-life course detachment from the workforce causes a clear depression in the rate of growth of human capital, over just that period in the working life during which the sons of the same fathers (Figure 3 and 4) enjoy their fastest rises in human capital. The most recent birth cohort, by contrast, has no concavity at this stage, and shows a pattern more similar to the men.



And again, we see a contrast between the absolute levels of increase in human capital from the earliest to the latest birth cohorts: the increases in Figure 6 of around 1.5 to 2 units, compare with the increases of 3 or more units among the daughters of high-human capital fathers in Figure 5. But what do these trends mean for equality of opportunity? We need to develop some more formal statistics.

7 Relative change in human capital transmission rates.

The ultimate point in mobility arguments tends, for obvious reasons, to involve *ratios of ratios*. In the traditional discussions of mobility between class categories, these are represented by odds ratios—the odds of people starting at the top remaining there relative to the odds of people starting at the bottom arriving at the top, and so on. The final point of the analysis of the scalar models also involves ratios of ratios. One reasonably direct analogy to

the transition probabilities or transition odds is the human capital reproduction ratio. We could, now—though this does not seem advisable—calculate for each birth cohort the *relative* human capital reproduction rate as between the children of high and low human capital fathers. This would produce initially rather perplexing results, however, given the regression-to-the-mean phenomenon. The fact that children of high-achieving fathers tend on average not to achieve quite as much as their fathers, while those of low-achieving fathers do better than their fathers, is itself an important sociological fact. But only the comparison of these relative reproduction rates over time would reveal the fact that the balance of advantage in intergenerational mobility was continuously shifting to the children of high-capital fathers. Of course we could then look at the ratios between relative reproduction rates for successive cohorts to show how the mobility regime was changing, thus yielding *ratios of ratios of ratios*. Perhaps easier to handle, is simply to compare, for each age, the growth rates of predicted human capital over various period of time for the two extreme paternal human capital groups discussed previously.

Table 8. Estimated human capital change ratios, and relative change ratios

WOMEN Age groups	25-29	30-34	35-39	40-44	45-49	50-44	55-59
women, father's humcap=5							
1930s birth cohort	4.60	4.73	5.07	5.42	5.47	5.11	4.65
1940s birth cohort	4.82	5.04	5.59	6.02	5.98	5.54	4.74
1950s birth cohort	5.09	5.40	5.93	6.06	5.74		
1960s birth cohort	5.41	5.81	6.09				
women, father's humcap=20							
1930s birth cohort	7.46	7.72	8.44	9.38	9.92	10.28	9.56
1940s birth cohort	7.94	8.42	9.27	10.44	10.90	10.33	8.56
1950s birth cohort	8.46	9.16	9.91	10.94	11.13		
1960s birth cohort	9.04	9.94	10.37				
Women's inter -cohort change ratios							
30s-40s, pa=5	1.05	1.07	1.10	1.11	1.09	1.08	1.02
30s-40s, pa=20	1.06	1.09	1.10	1.11	1.10	1.01	0.89
30s-50s, pa=5	1.11	1.14	1.17	1.12	1.05		
30s-50s, pa=20	1.13	1.19	1.17	1.17	1.12		
30s-60s, pa=5	1.17	1.23	1.20				
30s-60s, pa=20	1.21	1.29	1.23				
relative change in predicted humcap levels; father's humcap=20 : father's humcap=5							
30s-40s	**1.02**	**1.02**	**1.00**	**1.00**	**1.00**	**0.93**	**0.88**
30s-50s	**1.03**	**1.04**	**1.00**	**1.04**	**1.07**		
30s-60s	**1.03**	**1.05**	**1.02**				

MEN Age groups	25-29	30-34	35-39	40-44	45-49	50-44	55-59
men, father's humcap=5							
1930s birth cohort	6.72	7.48	7.93	8.42	8.33	7.90	7.16
1940s birth cohort	7.17	8.03	8.57	8.89	8.83	8.39	7.38
1950s birth cohort	7.26	8.14	8.83	9.32	9.30		
1960s birth cohort	6.99	7.84	8.70				
men, father's humcap=20							
1930s birth cohort	9.06	10.62	12.02	12.57	12.83	12.61	11.24
1940s birth cohort	9.77	11.55	12.97	13.50	13.80	12.73	10.37
1950s birth cohort	10.12	12.04	13.52	14.39	14.74		
1960s birth cohort	10.11	12.11	13.70				
Men's inter -cohort change ratios							
30s-40s, pa=5	1.07	1.07	1.08	1.06	1.06	1.06	1.03
30s-40s, pa=20	1.08	1.09	1.08	1.07	1.08	1.01	0.92
30s-50s, pa=5	1.08	1.09	1.11	1.11	1.12		
30s-50s, pa=20	1.12	1.13	1.12	1.15	1.15		
30s-60s, pa=5	1.04	1.05	1.10				
30s-60s, pa=20	1.12	1.14	1.14				
relative change in predicted humcap levels; father's humcap=20 : father's humcap=5							
30s-40s	**1.01**	**1.01**	**1.00**	**1.02**	**1.01**	**0.95**	**0.90**
30s-50s	**1.03**	**1.04**	**1.01**	**1.03**	**1.03**		
30s-60s	**1.07**	**1.09**	**1.04**				

Table 8 provides the clearest answer to the liberal theory's prediction of equalisation of life-chances – corresponding to hypothesis 2 in the previous section. It consists, first of a set of ratios between the predicted human capital levels of members of various birth cohorts at different ages—let as call them "human capital change ratios"—estimated separately for men and for women, for parental human capital scores of 5 and of 20. The values for most of

these change ratios are positive: so, for given levels of paternal human capital, sons' and daughters' predicted human capital has been rising, according to our model, continuously through the mid- and late-part of the 20th century, for both men and women. And then there is a set of *relative* human capital change ratios, estimated by dividing the change ratios for those with high human capital fathers by the change ratios for those with low human capital fathers. Few of these relative change ratios are below unity, none of them before the age of 50. Thus there is no evidence of "convergence" in our predictions of life-chances. On the contrary: the early decades of adult life show something of a divergence in mean predicted human capital, amounting to a small but nevertheless quite regular premium for the children of high human capital fathers in their late 20s and early 30s. Overall, certainly no equalisation of life-chances, and some evidence of increasing differentiation, to the advantage of the offspring of advantaged fathers for at least the earlier parts of their adult life.

Table 9: gender human capital ratios; women : men.

	25-29	30-34	35-39	40-44	45-49	50-44	55-59
father's human capital =20							
1930s	0.82	0.73	0.70	0.75	0.77	0.82	0.85
1940s	0.81	0.73	0.71	0.77	0.79	0.81	0.83
1950s	0.84	0.76	0.73	0.76	0.76		
1960s	0.89	0.82	0.76				
father's human capital =5							
1930s	0.69	0.63	0.64	0.64	0.66	0.65	0.65
1940s	0.67	0.63	0.65	0.68	0.68	0.66	0.64
1950s	0.70	0.66	0.67	0.65	0.62		
1960s	0.77	0.74	0.70				

We can finally consider the parallel issue of equalisation of life-chances between men and women (ie hypothesis 3 in the previous section). Table 9 shows the ratio of son's to daughters predicted human capital scores. Here it does appear that, for at least the younger age-groups there has been some partial convergence. But despite some convergence, there are still large gender gaps. And these gaps are larger for those with lower human capital fathers than for those with higher (ie hypotheses 4). These results imply higher levels of inequality in intergenerational mobility in life-chances for women than for men).

7 Conclusions

What is set out here is really just the starting point for a programme of analysis of mobility in human capital using retrospective data.

The next step is to investigate what mobility researchers call the "meritocratic triangle" – the pattern of association between origins, educational attainment and destination. How much of the affects of parents' resources on children's attainment is mediated by the children's performance in the educational system? This question is given additional bite, by the use of human capital as the indicator of position, and estimating it from a longitudinal record of the life-course. There is, in this case, not one, but a continuous sequence of successive destinations after leaving the educational system. So it becomes possible to consider the extent of the continuing influence of the parents' resources throughout the child's adult life. And these effects must then be set against the effects of other events of the life course—getting and losing jobs, marriage and divorce, children and sickness, all may be expected to play systematic roles in the accumulation and depreciation of human capital.

Human capital can also be considered at a household level. Married and cohabiting couples make choices which lead, in effect, to specialisation in different work tasks, only some of which contribute to the maintenance of human capital. It may of course be rational to do this from the point of view of maximising household consumption possibilities—and the investigation of this requires both the calculation of household-level human capital totals, and the investigation of individuals' shares of these taking account of domestic economies of scale ("equivalising"). What are the effects of those same events of the life course—job and partnership-related, fertility and health-related—on access to the individuals' shares of household capital?

The study of social mobility is the closed business of looking at movement between successive social positions. Human capital is however taken as an indicator of social position, not only because it is a good predictor of future human capital, but also insofar as it is one of the main determinants of social *conditions* both directly and through its affects on the accumulation of *wealth*. Human capital—wealth—life chances provides another triangle

of influence, which is clearly an essential element of the wider SPLC programme of exploration of the connection of social positions to social conditions.

Nevertheless, despite the preliminary and exploratory nature of this paper, some important substantive results do emerge:

- The first relates to the more general hypothesis associated with the "liberal theory of industrialisation" to the effect of increasing openness—in the sense of increasing equality of opportunity—with industrial development. The test for this, in its categorical form, is of declining relative odds ratios for transition into the salariat. The analogous scalar version of this test is of declining relative human capital change rates: if the society is becoming more open, if there is growing equality of opportunity, then the increase in the human capital over time will be greater for those with lower human capital parents than for those with higher. The evidence in Section 7 is that, on the contrary, that increase is the greatest for those whose parents had the most human capital—so we can reject the hypothesis in relation to the UK in the mid- to late-20th century. Our evidence suggests a small, but nevertheless clear and consistent, trend in the opposite direction, to increasing inequality in intergenerational life chances

- A second concerns gender. The substantial difference between men's and women's human capital levels is an expected (if not excusable) consequence of many women's partial or complete withdrawal from the labour force for family reasons, at stages of the life course when growth in human capital might be expected to be at a maximum. And this gender gap may be at least partly compensated for by intra-household transfers as suggested above. But, particularly in the light of high rates of divorce, which mean that the household-level human capital compensation for women's low individual human capital may be strictly temporary, this finding should raise a major issue of public policy

- A third, concerning an issue not discussed elsewhere in this paper, is the implication of this analysis for poverty research. It is widely accepted that net after-tax income inequality has been increasing in the UK for much of the second half of the 20th century. We might speculate that part of this phenomenon may reflect the increasing polarisation

in human capital implied by these declining intergenerational relative human capital reproduction rates.

There are also methodological and theoretical implications:

- The second half of this paper has, in effect been entirely devoted to the discussion of the implications of an intergenerational mobility model estimated in the form of a single OLS regression equation, which describes the behaviour of a large section of the population for the mid-part of the century. This is a simple and parsimonious approach, in a field that has previously relied on more complex estimations.

- In particular, the scalar rather than categorical approach to the measurement of social position does more than just allow us a flexibility of approach to modelling mobility that is absent in the categorical approach. It might, for example, be possible to use class categories on the right-hand-side of a regression equation predicting human capital outcomes. But this would (particularly with the 5- or 7-class categorisations usual in this field) require a multiplicity of interaction terms that would be difficult to interpret verbally in the compact manner exemplified by the relevant paragraphs of Section 5 above.

- Using the human capital indicator of position changes the nature of the claims that can be made about the nature of the inequality under discussion. Where the positional indicator is a nominal class category, the inequality being discussed concerns simply the chances of entering the particular classes – and yet the true normative concern may be with access to the rewards that are attached to the positions. The scalar human capital approach brings the concern about access to positions together with the concern about access to rewards, to constitute an analysis of intergenerational life-chances.

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