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SOCIAL CLASS AND EDUCATIONAL ATTAINMENT:

A COMPARATIVE STUDY OF ENGLAND, WALES AND SCOTLAND

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Abstract

This paper examines variations among England, Wales and Scotland in the association between social origin and educational attainment and the role that different national educational policies may have played in shaping these variations. Our findings show that country variation in the association between origins and attainment was mostly or entirely due to variations in overall levels of attainment. Moreover, inequality was highest where the proportions attaining a particular threshold were highest – upper secondary or better in Scotland. We propose a refinement of the Maximally Maintained Inequality theory (Raftery and Hout 1993) that takes into account that the trajectory of inequality is not linear: inequality can widen in the initial phase of expanding opportunity, en route to an eventual contraction, because the most advantaged groups are the first to exploit any new opportunities that policy changes offer. Finally, our results show that country differences in educational policy have not yielded different changes over time in the association between origin and educational attainment.

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Introduction

Whether educational policy can make a difference to social class inequalities in education has been widely debated in the sociology of education, and remains, and is likely always to remain, an unresolved question. On the one hand there has been a general tendency to conclude from research into educational expansion in Europe and North America in the past half century that, in most places at most times, educational policy has contributed relatively little, if anything, to reducing social inequalities (Cobalti and Schizzerotto 1994; Gray, McPherson and Raffe 1983; Halsey, Heath and Ridge 1980; Heath 1990 2000; Heath and Clifford 1990; Kerckhoff 1993; Kerckhoff, Fogelman, Crook and Reeder 1996; Blossfeld and Shavit 1993). Where reductions have happened they have come about either because of much wider programmes of social democratic reform, notably in the Scandinavian countries (Erikson and Jonsson 1996), or because of what Raftery and Hout (1993) have called the process of 'maximally maintained inequality': that is, in connection with any given threshold of attainment, relative inequality remains unchanged until almost everyone in the most advantaged class reaches that threshold, after which the next most advantaged class catches up, and so on. Thus if policy makers are not able or inclined to engage in large-scale social reform, then the only policy mechanism they have open to them to reduce educational inequalities is raising the overall level of participation and attainment, in the hope of sweeping up the most disadvantaged classes in the wake of general expansion. One problem with this strategy, however, is that expansion may widen inequalities, especially in its first phases as the middle classes use their own cultural capital to take immediate and maximal advantage of any new opportunities that are offered.

This view seems rarely to have been shared by reforming politicians and educational officials, who have continued to try to target policy on narrowing inequalities. Although it might be recognised that social class inequalities are much more intractable than those in relation to, for example, gender, ethnicity, or region, targeted programmes of action have, if anything, become more popular with governments since the late-1990s than at any time since the 1960s. For example, in a recent White Paper on higher education in England, the United Kingdom government still felt able to say that '[w]e must do everything that can be done to make sure that everyone who has the potential to benefit from a university education has the opportunity to do so', despite quoting evidence of fairly stable patterns of relative class inequalities in the four decades since the Robbins committee on higher education first enunciated that principle in 1963 (DfES 2003: paras 1.28 to 1.30). In the UK, there have been many precedents to this belief in the power of the state to broaden access – such as the building up of a system of free secondary education for all between the 1930s and the 1950s, the attempt to end selection within the public parts of that system between the 1960s (or, locally, even earlier) and the 1970s, or the use of public grants to encourage wide access to university from the early 1960s (Daugherty, Phillips and Rees 2000; Jones and Roderick 2003; Lawson and Silver 1973; McCulloch 2002; Paterson 2003; Simon 1991).

In Scotland, with a fair degree of educational autonomy even before the formal devolution of political power to the new Scottish Parliament in 1999, the belief in the power of the state to democratise access has been stronger: a full secondary system was in place by the 1930s, the ending of selection in the public sector of schooling was complete by the 1970s, and there were sources of public and charitable grants for university students long before the 1960s. And yet the comparative evidence within the UK is that relative educational inequalities among classes, at least until the 1980s, were not much less in Scotland than elsewhere (Gray et al 1983: 201-30). The policy changes of the last three decades, especially, may have led to some reduction in inequality (Croxford 1994; Croxford and Raffe 2005; Gamoran 1996; McPherson and Willms 1987), but the main effect is as likely to have been through the processes summarised by Raftery and Hout as through any other means: for example, one of the main reasons why inequalities are falling in attainment in post-compulsory schooling is simply that staying-on rates into that stage are also becoming less unequal, and that in turn is almost certainly because the children of professional parents had reached saturation levels by the mid-1980s (Paterson and Raffe 1995). Nevertheless, the striking feature of all three education systems in Britain is how similar they are in these respects by broader comparative standards: for example, Smith and Gorard (2002), analysing the data from the PISA study, found that social class differences in the British systems are alike and are smaller than in most OECD countries, although generally not smaller than in Scandinavia.

This paper uses the British Household Panel Study to investigate some of these questions, using date of birth to define synthetic cohorts, and testing both the questions about change in inequalities over time and also the questions about differences among the three British countries; we are using this survey as a source of high-quality cross-sectional data, rather than as a panel. It thus follows Heath (2000), who used the same source in analogous ways, but we have been able to compare England, Wales and Scotland by taking advantage of the enhancements to the BHPS samples in Wales and Scotland which were introduced from 1999 (the ninth wave of the original survey).

The rationale for investigating comparative questions by means of the separate education systems of the UK has been discussed fully by Raffe, Brannen, Croxford and Martin (1999): one advantage is that, because the broad social structure and structure of the economy are much the same throughout the UK, we are better able to test for the independent effects of differing systems of education or different educational policies than we can be where these variables are confounded by features of the economy or society. The three British systems nevertheless also have important structural features in common. Children enter primary school at age 5 and secondary school at age 11 (England and Wales) or 12 (Scotland). The main route to university is through public examinations taken at around age 17 (Scotland) or 18 (England and Wales), and the typical university degree lasts 3 years (England and Wales) or 3-4 years (Scotland). The main policy change in the period we consider was the shift from a selective system of secondary schooling in the 1950s to one that was largely non-selective by the 1970s. From the late-1970s, no public-sector school in Scotland selected its pupils in any formal way (McPherson and Willms 1987), and only one did so in Wales (Fitz 2000). However, a minority of public sector schools remained selective in England (around one in ten) and minorities of children in all three countries continued to attend selective private schools (around a further one in ten in England, about 4% in Scotland and about 2% in Wales) (Benn and Chitty 1996: 88).

The Scottish curriculum and examination systems were separately controlled from those embracing England and Wales. Further distinctive features of these three systems are mentioned where they are relevant to the argument below.

The main questions we address are:

- Is the association between social class of origin and educational attainment different in the different countries of Britain?
- Has the association between social class of origin and educational attainment changed over time between the cohorts who left primary school on the eve of World War II and those who did so in the late 1980s?
- Does any change over time vary in the different countries of Britain?
- Can change over time, or geographical variation, be plausibly attributed to explicit policy?

Data and Methods

The surveys are described in the Appendix. Five main variables are used in this paper. Place of birth has simply been categorised as England, Wales and Scotland, and respondents who were not born in these three countries have henceforth been omitted; we sometimes refer to the retained sample as the 'British' sample. (Heath (2000) provides evidence on the educational attainment of migrants to the UK.) It contained 14,141 cases (of all ages 15 and over); this number falls further once we have omitted people with missing data and restricted the age range as noted below. The variable recording place of birth is referred to as 'B'.[1] We also use the gender of respondents, although – as reported later – we concluded that the patterns of social inequalities in which we are primarily interested did not vary by gender. The three other variables were:

Birth cohort: variable 'C'

Any division into decades is arbitrary, but the rationale for this choice may be summarised as in Table 1, which shows, very briefly, the main educational and

[1] Ideally we would have had information on the country in which people received most of their initial education, but that is not available from the survey. From other sources, we can estimate, however, that the large majority of people who were born in England, in Scotland or in Wales will have received their education in that same country. The British Social Attitudes Survey of 2000 found that, of people born in England, 83% had never lived outside England (on a base of 1660); that figure rose to 97% for people aged 18-24 (base of 134). The Scottish Social Attitudes Survey of 1999 found, similarly, that, of people born in Scotland, 76% had never lived outside Scotland (base of 1280); this was 89% among those aged 18-24 (base of 84). The Welsh Life and Times Study of 2001 found that, of people born in Wales, 70% had never lived outside Wales (base of 837); the figure was 81% among those aged 18-24 (base of 68). These figures, most relevantly the figures for 18-24-year olds, provide lower bounds on the proportion of people born in the country who were schooled in the country. Although they refer to recent years, the fact that spatial mobility has grown since the middle of the twentieth century would suggest that they are also lower bounds for the whole of the last 50 years. Thus by far the strongest educational influence on the people assigned to each country here by birth will have been the educational institutions of that same country. (Further details of the surveys quoted in this note are in the web site of the Economic and Social Data Service, www.esds.ac.uk.)

economic factors which would have had an impact on the first twenty years in the lives of people born in each of these decades. We confine ourselves to people born after the mid-1920s because the level of missing data on class of origin rises sharply for older ages. We also include only people aged 23 and older in 1999, because most of them would have finished their formal initial education by then. The resulting sample consisted of 10,998 cases.

***** Table 1 here *****

An analysis based on synthetic cohorts of this sort is liable to bias due to differential mortality or differential migration. We consider this question in the Appendix, but our conclusion is that, while we cannot be sure that there is no bias, the likely effect is to lead us to underestimate any reductions over time in class inequalities in attainment. We have guarded against the greatest threat to bias from migration by defining the spatial variable as where people were born rather than as where they were living at the time the survey was carried out.

Class of origin: variable 'O'

Class of origin was derived from the information on fathers' and mothers' occupation when the respondent was aged 14. We follow the main literature in this area by using the Goldthorpe class scheme (Erikson and Goldthorpe 1993: 38-9), condensed into the five categories shown in Table 3. Respondents were assigned to the class of the parent who had the higher status on the Goldthorpe scheme. The unweighted proportion of the British sample aged 23-72 allocated to an origin class from father's class was 58%, from mother's class was 21%, and from both equally was 10.4%; the remaining 10.6% had no information on either parent's class.

Educational attainment: variable 'E'

Attainment is summarised into the levels shown in Table 2, which also shows their distribution in each cohort in each country. This table illustrates clearly the various waves of expansion in the last half century. Thus the growth in secondary schooling is reflected first in the very large fall across the cohorts in the proportion with no certificates at all (from around one half in the oldest cohort to no more than about one in ten in the youngest). By the middle cohort onwards, around one half or more had acquired at least an upper-secondary certificate. By the two youngest cohorts large minorities of one sixth to one fifth had reached degree-level higher education, in contrast to only about one in twenty for the oldest cohort. These trends are very similar in the three countries, but Scotland has slightly larger proportions reaching at least upper-secondary level and – in the youngest cohort – a slightly larger proportion attaining a degree. Note that this education variable records all attainment, not only that received during initial education. Therefore we will be analysing the long-term educational opportunities available to people born at different times. Nevertheless, the strongest influence on adults' propensity to take part in formal learning is their experience of initial education: for evidence relating to this, and covering most of the period in which our respondents were adults, see Makepeace, Dolton, Woods, Joshi and Galinda-Rueda (2003: 45-7 and 58-63). We concentrate our discussion on attainment of upper-secondary certificates or better and of degrees.

***** Table 2 here *****

Analysis

Thus we are primarily interested in the associations between the variable E and the variables O, B, and C. We test this by log-linear modelling, using the software LEM developed by Jeroen Vermunt of the University of Tilburg (Vermunt 1997). The general approach to log-linear modelling which we use is outlined by, for example, Erikson and Goldthorpe (1992: 28-64). In our notation, single variables refer to main effects, for example O to the main effect of class of origin. Concatenations of variables refer to interactions: for example, OE refers to the interaction of origin class and education. Thus, unlike some authors, we do not use 'OE' to include the main effects, and we would always write the saturated model for the OxE table as O + E + OE. The fit of models is measured in the usual way by the L^2 statistic, which is the same as the log likelihood ratio and thus is (under the relevant null hypothesis) approximately distributed as a chi-squared variable. For more descriptive purposes, we sometimes cite odds ratios and also the measure known as Cramer's V, which is a general measure of association for any two-dimensional contingency table: it ranges from 0, when the two variables are not associated, to 1, when they are perfectly associated.

We could have treated E as an ordered categorical variable with multiple categories, but for simplicity we choose to re-code it as two, nested dichotomous variables: whether or not the respondent possessed (a) an upper secondary certificate or better, or (b) a degree. In large samples, such as here, there is little loss of statistical power by proceeding in this way. Differences in the upper-secondary examination systems between Scotland and England and Wales prevent our interpreting the first of these dichotomous variables as a measure of common standards of absolute attainment; we prefer to view it as an indicator merely of successful completion of upper-seconday schooling.

Implicit in our discussion is that we may distinguish between variables that are under the influence of policy makers and those which are not. This is reasonable only to a rough approximation, and so it as well to be explicit about what we are assuming:

- Policy cannot directly effect the essentially demographic factors involved in the social class distribution of the population (O), the patterns of birth, migration and death that influence the size of cohorts (C), the population of countries (B), or the interactions among these three.
- Because the attainment variable is intrinsically an ordered one, its main effect is arbitrary, depending essentially on the cut-off points used. (Something the same could be said about the main effect of social class.) So the main effect E is not a matter of policy.
- Although the aim of policy has often been to change the association between origins and attainment, we assume that in a general sense this is not directly under the influence of policy makers. Thus the OE interaction is assumed not to be driven by policy. However, we also assume that changes in this over time (OEC) may reflect policy, as might variations in it among countries (OEB), or changes in such variations over time (OECB).
- Likewise, policy may affect the general rise or fall in levels of educational attainment (EC). Moreover, policy is further implicated insofar as starting-point differences in policy lead to differences in education levels between

countries (EB), and policy may cause these starting points to evolve in different ways in different countries (ECB).

Clearly none of the variables is wholly uninfluenced by policy, especially over a long period of time. The point is, rather, that the interactions EC, EB, ECB and the interactions of each of these with O reflect deliberate decisions of educational policy more than the others.

We therefore test the following series of models (now using 'E' to refer to one of the two dichotomous versions of the full variable):

(1) Are there any national differences in the extent to which class of origin is associated with educational attainment? This is assessed by testing whether there is a need for an OEB interaction in the OxExB table.

(2) If we do not find any such national differences, do any become evident if we remove the extent to which levels of educational attainment vary among the three countries? Removing control for variation in average attainment among the three countries means dropping the interaction EB. So the question is: does adding the OEB interaction make any difference to the model O + E + B + OE + OB? Note that the resulting models will be non-hierarchical because OEB is included but EB is not. The model with EB included may be thought of as estimating what OEB would be if average levels of educational attainment were (counterfactually) the same in the three countries. The model without EB therefore estimates OEB when average levels of attainment vary among the countries in the manner observed in the data.

(3) Does the association of origin and education vary over time? This will assess whether educational inequality has changed over time. We test it first by calculating whether the interaction OEC adds anything to the model O + E + C + OE + OC + EC, and then – analogously to (2) – after removing the term EC.

(4) Does any OEC interaction vary among the countries? This will test whether different educational policies pursued in the different countries have had different effects on educational inequality over time. The first way of testing this is by whether the interaction OECB adds anything to a baseline model that contains all the main effects, all the 2-way interactions, and all the 3-way interactions.

(5) Analogously to (2), does the answer to (4) change if we remove from the baseline model against which OECB is compared all terms that might reflect policy differences? That is, from the baseline model summarised in (4), we remove the interactions EB (average levels of education in the three countries), EC (average levels of education over time) and ECB (differences among countries in any changes in the average levels of education over time).

The approach adopted here to understanding higher-order interactions such as OEB is analogous to that outlined theoretically by Ringen (1997: 129-48) and Swift (2000) and developed by Ringen and by Breen (2004). However, unlike Ringen and also Hellevik (1997), we are not suggesting that measures of association are not useful: we are convinced by, for example, Swift (2000), Marshall and Swift (1993, 1999) and Swift and Marshall (1997) that understanding inequality of opportunity is an important aspect of investigating social inequality and social justice. Our models that omit certain margins (such as (2), (3) and (5)) are offered not as alternatives to standard hierarchical log-linear models but as ways of explaning why, in them,

apparent changes in relative opportunities between social classes might not be detectable.

Results

We start with a comparison of the average levels of attainment among the three countries, ignoring cohort for the time being. For the two attainment variables on which we concentrate, the results are shown descriptively in Table 3. On attainment of at least an upper secondary certificate, the main point that stands out from Table 3 is that Scotland has higher levels than England and Wales for all classes apart from the unskilled category, in which attainment is much the same in all three countries; thus the gap in attainment between classes (whether measured as differences between percentages or as odds ratios) is greatest in Scotland. For degrees, the level in Scotland is higher than in either Wales or England, this time also including the unskilled class. Thus – apparently paradoxically – on attainment of at least an upper secondary certificate, inequality is greater in Scotland (averaged across cohorts) even though for no class would it unambiguously have been more disadvantageous in absolute terms to have been born in Scotland than to have been born elsewhere. Nevertheless, because inequality in Scotland is higher at upper-secondary level or better but not at degree level, inequalities in *progression* rates in Scotland are lower than those in England or Wales. We mean by progression rates the proportion of those with at least an upper-secondary certificate who gain a degree. In Scotland, this rate for people of professional origin is 0.39 (the ratio of 30.4 to 78.7 in Table 3), and for unskilled manual origins is 0.15, and the ratio of these two is 2.6. The analogous ratio for England is 3.8 and for Wales is 2.8.

***** Table 3 here *****

The formal statistical modelling confirms these impressions about levels of inequality, and helps to clarify what kind of difference we are observing when we perceive country differences in these tables. The first row in Table 4 shows log-linear models for testing whether there are any country differences in the association between origins and education: that is, it shows the models that (compared to the saturated models) omit only the 3-way interaction OEB. The conclusion is that there is no evidence of any need for such an interaction for the variable recording degrees, but that there is a 3-way interaction for the criterion of upper secondary certificates or better. That is, the association between origins and education did vary among countries, in the way noted from the descriptive percentages above: the gap between social classes (averaged across cohorts) was greater in Scotland.

The next pair of rows gives us some insights into how that came about. Models 2 and 3 omit the EB interaction. Thus they do not control for country differences in the average level of attainment. (That there are such differences may be seen by comparing the models in row 1 with the models in row 2: in each case, there is a statistically significant difference in L^2.) The difference between models 2 and 3 is thus a measure of the extent to which the association of origin and education varies among countries in ways that might be attributable to such average differences. It can be seen that for all three education measures there are now large differences. Taking together the comparison of models 2 and 3 with the discussion of models 1, we may conclude that there is country variation in the association between origins and attainment, but that it is mostly or entirely due to variations in overall levels of attainment. In particular, in relation to attainment of at least an upper secondary certificate, if Scotland displays more inequality (when cohorts are ignored), then that

is because it has higher overall levels of attainment. We would emphasis that we are not suggesting that the models 3 are a better way of representing the data than models 1: the purpose of models 3 is to help us understand how models 1, mainly showing no country differences in inequality, are consistent with the apparent such differences in Table 3.

***** Table 4 here *****

We turn now to changes over time (as reflected in differences among the cohorts). The descriptive data are in Tables 5 and 7. Looking first at the overall trends within countries (the 'total' row in each part of each table), we can see that in relation to the criterion of at least an upper-secondary certificate (Table 5) Scotland was ahead for people entering secondary school by the 1950s and simply maintained that advantage thereafter. In relation to degrees (Table 7), Scotland may have had an advantage over England, but not Wales, for people entering university from the late 1950s to the late 1960s; England then caught up, but Scotland moved sharply ahead again for people entering in the late 1980s. These patterns are consistent with the Scottish selective secondary system's being rather more open than its counterpart in England: the proportion of secondary places which were in academic schools was, by the late 1950s, around 40%, in contrast to England where it was at most about 30% (McPherson 1973: 165 and 187). That would then have fed into a higher level of participation in university-level education. The more recent divergence in relation to degrees reflects the consistently higher rate of participation in higher education in Scotland than elsewhere in Britain since the 1970s (see, for example, Parry 1997: 12).

These comments refer to average trends. The detailed trends for each social class show similar patterns, and thus suggest that the overall expansion was at least shared equally across classes. (We test this formally below.) For older cohorts the relatively small base for the percentages in some classes makes the information about degrees rather erratic, but the trends are clear and stable for the attainment of at least an upper secondary education. In absolute terms, the greatest increases in Scotland were for people entering secondary education in the 1950s (the second cohort): for example, between the first and second cohorts, the proportion rose from 53% to 80% in the professional class, 50% to 69% in the routine non-manual class, 35% to 48% in the self-employed class, 26% to 43% in the skilled class, and 11% to 22% in the unskilled class. The increases between later cohorts are all much smaller, except in the self-employed class and the unskilled class. In the former, there was an equally large increase between people entering in the 1950s and those entering in the 1960s, from 48% to 62%. For the unskilled class, there was a further large rise at the time too (22% to 38%), and a third increase to 48% in the youngest cohort. In contrast to the importance of the 1950s in Scotland, it would appear that the important decade in England and in Wales was mostly the 1960s. (We return to this point in the Discussion.)

The final point to note from the descriptive data is a further comment on the points we made earlier about the greater inequality in Scotland at a higher level of overall attainment. If we compare the youngest cohorts in each of Tables 5 and 7, it can be seen that the level of attainment in the unskilled class is always higher in Scotland than in either England or Wales (although not all the differences are statistically significant). On upper secondary attainment or better, the proportions are 48% in Scotland, 44% in Wales and 41% in England. On degrees, they are 8% in Scotland,

6% in Wales and 2% in England. Moreover, unlike the averages (Table 3), the inequality in the youngest cohort in Scotland is no greater than in England or Wales. This is illustrated for the attainment of at least an upper-secondary education by the odds ratios and values of Cramer's V shown in Table 6: Scotland may have gone through a period of widening inequality as completion of secondary education expanded in the second-last cohort towards two thirds of the age group, but once all the classes above the lowest had more than one half completing, that class began to catch up in the final cohort.

Our data are therefore consistent with the findings of McPherson and Willms (1987), Croxford (1994) and Gamoran (1996) on the effects of introducing comprehensive secondary schooling in Scotland. By means of analysing the attainment of successive cohorts of people leaving school between the mid-1970s and the late-1980s, each of these authors found some narrowing of inequalities relating to social class. The cohorts they studied would have been born between the late-1950s and the mid-1970s, and thus would correspond approximately to our two youngest cohorts. So the narrowing of inequality in the youngest cohort in Scotland, as illustrated in Table 6, may be reflecting the same patterns as these authors reported: it was the first to experience the full effect of comprehensive schooling.

***** Tables 5, 6 and 7 here *****

Again, these descriptive comments are confirmed by modelling, as shown in Table 8. As with the models 1 in Table 4, the first three rows show hierarchical loglinear models. Comparing models 1 and 2 shows that, averaged over the three countries, there is no evidence that the association of origin class and attainment changes over time: there is no need for the 3-way interaction OEC. Thus the differentials remain constant in an upward trend of attainment. The models 1 (with no 3-way interactions) fit the data well, but models 3 confirm that there is no formal need for the 4-way interaction OECB. That is, there is no evidence that time trends in the OE interaction varied among countries. This conclusion is analogous to the finding from Table 4 that, in a hierarchical model, there was no evidence that the OE interaction (averaged across cohorts there) varied among countries.

The next pair of rows in Table 8 tests whether there is evidence of an OEC interaction when – as we explained in the Methods section above – terms which could be attributed to policy are dropped from models 1 and 2. Models 4 are analogous to models 1, without the terms EB and EC, which respectively reflect country differences in overall levels of attainment, and changes over time in overall levels. Models 5 then, analogously to models 2, add the interaction OEC. There is now clear evidence that the association of origin and education changes over time: the OEC interaction is large for each of the attainment variables. The contrast of this conclusion with that drawn from models 1 and 2 may be interpreted as showing that there is a change over time in educational inequality, but that it can be entirely explained by changing average levels of attainment, as embodied in EC. (Similar conclusions to those reached by comparing models 4 and 5 were found when the EB term was included in the models, and also when the OEB and OCB terms were included.)

The final pair of rows in Table 8, however, yields a contrast with the final conclusion from Table 4. Models 6 are analogous to models 3 in Table 8, again without those terms which could be attributed to policy: that is, models 6 drop the terms EB, EC and ECB, the last estimating the variation among countries in the trends

over time in average levels of attainment. Models 7 add the 4-way interaction OECB. They thus estimate what the OECB interaction would be if patterns of different average attainment among countries and over time were as they in fact appeared in the data. But, unlike the analogous move in Table 4 or as between models 4 and 5 in the present table, we still do not conclude here that there is any need for this interaction: the differences in L^2 between the models in row 6 and those in row 7 are all small compared to the difference of 32 degrees of freedom. So country differences in policy could not be said to have yielded different changes over time in the association of class and attainment (no OECB interaction), even though (again when policy is not discounted) we have just seen that there are such changes in that association on average across the three countries (an OEC interaction).

All these models were tested separately for men and women – that is, both those in Table 4 and those in Table 8 – but the conclusions were the same for men and women. That is, the patterns of association between class and attainment, and the extent to which they varied over time or across countries, were not dependent on gender. The models were also tested with a separate class category for people whose origin class could not be determined (around one in ten of all respondents). The conclusions were not affected.

***** Table 8 here *****

Discussion

The conclusions we might draw about policy, or about the impact of policy on educational inequality, are not straightforward, especially when we take into account both variation over time and variation among the three countries of Britain. In nearly all cohorts, Scotland had higher average proprotions attaining at least an upper secondary certificate than England and Wales; but it also had higher levels of inequality when attainment was averaged across cohorts. Putting these two together, we could see that no class would have been worse off in Scotland than in England or Wales, despite the greater inequality: this is a rather similar conclusion to that reached by Breen, Heath and Whelan (1999) for the Republic of Ireland in comparison to Northern Ireland. At degree level, Scotland also had higher levels of attainment than England or Wales, but no higher levels of inequality, but of course this was at much lower levels of average attainment than for the criterion of upper secondary level or better.

None of this provides straightforward confirmation or refutation of the Raftery and Hout hypothesis of maximally maintained inequality. Inequality was actually highest where the proportions attaining a particular threshold were highest – upper secondary or better in Scotland. Moreover, only in relation to this threshold could the overall level of attainment be described as reaching saturation in the most advantaged class (83% in the professional class in Scotland in the youngest cohort), and thus to be approaching the conditions in which the less advantaged classes are pulled up behind.

We might then suggest that the hypothesis of ‘maximally maintained inequality’, although valuable, needs to be refined to acknowledge that expanding education systems tend to go through four stages, which could be schematically set out as follows, with short titles chosen to suggest the main organisational features of each:

- *Elite*: These are characterised by low levels of average attainment and high levels of inequality. The closest to this here might be the university system

faced by the members of our oldest cohort, those who entered university in the immediate aftermath of World War II.

- *Tracked merit selection*: These show less inequality than elite systems because able members of disadvantaged classes are selected into academic tracks. Because of that, but also because selective systems tend to be used very effectively by middle class groups, the moderated inequality tends to go along with moderately high levels of average attainment. The best instance in our data would be the fullest flowering of the selective system of secondary schooling in Scotland from the late 1950s to the mid 1960s, in other words for our third cohort. Inspection of the odds ratios and Cramer's V in Table 6 shows that inequality mostly fell in that cohort in Scotland compared to the immediately preceding one, and in some respects rose again in the following cohort: for example, the odds ratios comparing the unskilled class to the professional class were 14.4 in the cohort which entered secondary school in the 1950s, 6.9 for those who entered in the 1960s, but back up to 9.0 for those who entered in the 1970s.

- *Untracked merit selection*: The next stage is then the result of attempts to base the whole system on truly merit-based selection, often by means of the ending of selection for secondary schooling but sometimes also, in anticipation of that, through local experiments in widening access or through the extension of certification to wider groups; all three of these features were present in the British systems at varying times from the 1930s onwards, as small-scale local experiments until the 1950s and then as more systematic national policies to change the organisation of secondadry schooling from the 1960s onwards (Gray et al. 1983: 231-47; Reynolds, Sullivan and Murgatroyd 1987: 4-28). This stage yields a large rise in overall attainment, mainly because children from disadvantaged class backgrounds gain access to formal certification for the first time. Because the middle classes also prove adept at taking advantage of the new opportunities on offer – and indeed, as Ringen (1997: 147) suggests, this may be the political condition that is required to reconcile them to the ending of formal selection – relative inequality rises again. For Scotland, this is seen in the fourth cohort noted above: inequality rose again in that cohort (people who entered secondary school in the 1970s) from its level among those who entered in the 1960s (the third cohort). The same is even more strikingly true of Wales in the third and fourth cohorts in Table 6, where inequality is very high compared to the later and earlier cohorts, but where average attainment and attainment in both the manual classes moved up sharply (as shown in Table 5). On the whole, none of the three countries studied here moved beyond this stage in any of our five cohorts. Because Scotland probably reached this stage first, the Scottish association of class and attainment averaged across cohorts (as in Table 3) shows both higher attainment and, in some respects, higher inequality than the other two countries.

- *Universal*: It would be only at this final stage that the full strength of Raftery and Hout's hypothesis would come into effect. Where a level of attainment is reached by a large majority of an educational cohort, inequality does start to fall for that reason alone. There is no clear instance of that in our data, but Scotland may have been reaching it for the criterion of completing upper-secondary education in the final cohort: attainment nearly reached saturation in the professional class (Table 5), and Table 6 suggests that inequality was not

only lower than in earlier cohorts in Scotland but was also not any greater than in the other two countries. As we have noted, this is broadly consistent with previous analysis of comprehensive secondary schooling in Scotland (by McPherson and Willms, Croxford and Gamoran), but – in our longer time-scale – it suggests that the effects of these reforms were mainly through encouraging expansion. Indeed, if there was a reduction of inequality in the final cohort in Scotland – people entering secondary school from the early 1980s – it was only to return it to levels that had previously existed for people entering secondary school from the early 1960s, the time of the fullest flowering of the selective system; and so the main change for the final cohort was that overall participation was higher. Wales, with an even more thoroughly comprehensive secondary system than Scotland (Fitz 2000), probably experienced a similar reduction of inequality in the final cohort. Whether the experience of the final cohort is an instance of Raftery and Hout's hypothesis depends on whether the level of attainment in the most advantaged class may be said to have reached *de facto* saturation (as opposed to reaching the merely arithmetical ceiling of 100%). There is some evidence from Table 5 to believe that this may indeed have happened, in the sense that no class in any cohort in any of the countries has much above 75-85% reaching the threshold of an upper-secondary certificate, and that the professional class has been at this level since the second cohort in Scotland and the third cohorts in England and Wales. That would coincide with the point noted earlier (in our discussion of Table 5) that the moment at which expansion started to benefit all the class groups was the 1950s in Scotland but the 1960s in the other two countries.

One question that would have to be asked about this tentative scheme is whether it describes only a British model (or possibly a British and Irish one), or whether it, or an adaptation of it, might be relevant more widely. Whatever the cogency or otherwise of such a scheme, however, our main point would be that there are two stages where inequality is relatively high: one is certainly the old elite systems, but the other is a step on the journey of expansion, the third stage we have described here.

If anything like this is a reasonable interpretation, then rather difficult questions are raised for the role of educational inequality when analysed dynamically over time, and comparatively among systems, especially when these systems are (as here) embedded in a single labour market and economy. What we might call the social justice dilemmas may be illustrated by considering the unskilled class in Scotland according to the criterion of upper secondary education or better (Tables 5 and 6). Even in the youngest cohort, the odds ratio comparing this class to the professional class is no lower in Scotland than in England or Wales (5.1 as against 5.4 and 3.8). Yet, as noted earlier, the absolute level of attainment in this class is clearly higher in Scotland (48% against 41% and 44%). Given the opportunities to move around Britain (or further afield in the European Union) for work or for post-school education, is the higher level of achievement in Scotland worth paying for by higher levels of inequality? Putting this rather bluntly: does being bottom of the heap in Scotland matter more than having a level of attainment (48%) that is close to the attainment reached by the next class up in England and Wales (the skilled class: respectively 50% and 48%)? This is somewhat reminiscent of a finding of Douglas, Ross, Maxwell and Walker (1966: 156) that, in the selective system that operated before the 1960s, at almost all levels of measured ability, a working-class child in Scotland was as likely as a middle-class child in England and Wales to enter a

selective course, but that this was almost entirely because more selective places were available in Scotland: class inequalities showed little difference. Again, the question is similar to that raised by the conclusions of Breen et al (1999: 207) for the Republic of Ireland. Any claim that the unskilled class's positional advantage in Scotland is no better than that of its class counterparts in the rest of Britain is not wholly persuasive if there are at least two dimensions of comparison – not only with other classes in Scotland, but also with all classes elsewhere.

If this quite high level of attainment in the lowest class in the non-selective system were achieved at the price of greater inequality, then policy makers might not demur, especially if the inequality is only part of the route towards expansion for all classes. But our final conclusion does not suggest that there are any easy inferences about the ways in which policy might have had its effect in the past. Any advantage for Scotland in the attainment of an upper secondary certificate or better did not change over time, even when we did not control for the variables which we suggested reflect policy decisions (models 4 to 7 in Table 8). The Scottish advantage was evident in the second cohort, and remained largely stable over time even while all three systems expanded enormously. The advantage was shared equally by all classes. So it was an advantage that was established in an era when secondary schooling was mostly selective. It was inherited by the non-selective system after the 1960s, and maintained through waves of reform to curricula and examinations since then. Eventually, in the youngest cohort, that advantage at secondary level reached degree-level higher education. So, if policy is responsible for the Scottish advantage, then it is only so to the extent that it has found ways of maintaining an advantage that was inherited from the past. Despite all the attention of Scottish policy in the last four decades on reducing social inequalities in attainment, its main impact has been to raise average levels of attainment, working through the institutions of schools and universities that probably owe more to their antecedents than the most radical political aspirations might desire.

Appendix : The British Household Panel Study

Samples

The data are from the first nine sweeps of the British Household Panel Study, 1991-1999. The BHPS was inaugurated in 1991 primarily to track individuals' experience over time, but we are using it as a high-quality cross-sectional survey. A rich set of information was collected in the first survey on respondents' earlier lives, including date and country of birth, the work which the respondents' parents were doing when the respondent was aged 14 (from which social class schemes may be derived), and a list of educational credentials which respondents had acquired. These baseline data were also then collected in 1999 from enhanced samples in Scotland and Wales. The objective of the original survey was to have 5,000 household throughout the UK, and thus about 10,000 adults, adding in all new adult members of households which these members subsequently formed; the sample was selected from the Postcode Address File, with households selected randomly within addresses. The 1999 enhancements augmented the Scottish and Welsh samples to about 1,500 households each, yielding total samples sizes in these countries of around 3,000 adults (including the surviving members from the original sample); there are approximately 9,000 sample members in England. The present analysis uses only those sample members from the earlier waves who were still in the study at wave nine (see below). Weights are used to compensate for non-response. Further information is available from the survey's web site, at www.iser.essex.ac.uk/ulsc/bhps.

Sample attrition

Combining data on new sample members from 1999 with data on the surviving sample members from 1991 could potentially lead to some bias. To assess this, we compared four characteristics of people who were interviewed in 1991 with the same characteristics of that subset of them who were also interviewed in 1999: father's and mother's occupation as collected in 1991, respondent's occupation in 1991 (each the 11-category Goldthorpe scheme), and respondent's highest level of educational attainment in 1991 (a 13-category distribution). There was in fact very close agreement, as measured by a chi-squared test. Treating the 1991 distribution as the expected one, and the distribution of the 1999 survivors as the observed, the chi-squared values for the goodness of fit were 3.89 for father's occupation, 6.54 for mother's, and 14.49 for respondent's (each on 10 degrees of freedom); the chi-squared value for the attainment variable was 17.48, on 12 degrees of freedom. Thus there is no reason to fear that attrition was differentiated by the main relevant characteristics for our analysis, and so the use of the combined information for the 1999 sample should not after all be biased.

Effects of differential mortality and migration

Using a cross-sectional survey to study social change is the only option we have in the absence of regularly repeated surveys over a long period of time. The main threats to validity are selective mortality and selective migration. Mortality is likely to bias our results in a conservative direction, in the sense of making it more difficult to detect any narrowing of educational inequalities. This is because the death rate by the time of the survey will have been greater among poorly educated working class people than among other groups, and this will have been most notably the case for people born early in the twentieth century. That will tend to lead to an overestimate of the

educational levels of working class people in older cohorts, and so to an underestimate of the extent of class inequality in older cohorts. Thus, where we do find evidence of a narrowing of inequalities, we will probably have underestimated its extent. For the same reason, however, if we find that inequality has widened, then that could be due to selective mortality (low-attaining working-class people having died in larger proportions than any other group, and this leading to an over-estimate of working-class attainment in older cohorts). However, this is unlikely to be a serious problem for cohorts aged under about 45 in 1999, in other words people born since the mid-1950s, our final two cohorts.

We avoid biases relating to patterns of immigration of respondents to the UK by confining our attention to people born in Britain. Selective emigration is a more intractable problem, since no study has followed up whole cohorts of emigrants throughout their whole emigrant career. Nevertheless, the likely biases would probably – as with selective mortality – work in a conservative direction for detecting any reductions of inequality. Successful emigration usually depends on people having networks in the destination country into which they could fit. One means of access to these is the possession of educational credentials, and so, in the normal course of events, well-educated people would be more likely to emigrate than less-well-educated (Elliot 1997). That in itself would not bias our analysis, if, for example, class of origin had no effect on the propensity to emigrate other than through its effect on the acquiring of credentials. But, insofar as this is not the case, it seems likely that, at a given level of educational attainment, people from middle-class origins would be, on the whole, more likely to have had access to networks in the destination country than people from working-class origins: this was found, for example, in Walker's study of Scottish chartered accountants in the late nineteenth and early twentieth centuries (Walker 1986). That would mean that emigration would probably have creamed off some of the better educated people of middle-class origins from earlier cohorts, and so would tend to lead us to underestimate the educational inequalities in these cohorts, and so also to underestimate any reduction in inequality by the end of the century. Some confirmation of this is found from the BHPS itself, but only for migration among the four countries within the UK: the most likely to migrate are those with high levels of attainment and relatively advantaged class origins.

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Table 1

Summary of educational and school-leaving experiences of five cohorts

birth cohort	entered secondary school	reached minimum leaving age	almost all entered labour market
1927-36	**early-mid 1940s:** Scotland: (selective) secondary education for all, not yet fully in England or Wales	**mid-late 1940s:** austerity; leaving age raised to 15	**1950s:** post-war boom
1937-46	**early-mid 1950s:** first years of (selective) secondary education for all, gradual expansion	**mid-late 1950s:** post-war boom	**1960s:** growing experience of first-level school certification
1947-56	**early-mid 1960s:** first phase in ending of selection for secondary school, not yet complete	**mid-late 1960s:** expansion of O level (England and Wales), and introduction of O grade (Scotland)	**1970s:** first expansion of higher education
1957-66	**early-mid 1970s:** consolidation of ending of selection for secondary school: complete in public-sector in Scotland, almost complete in Wales, never completed in England	**mid-late 1970s:** economic recession; leaving age raised to 16	**1980s:** economic recession; growing experience of upper secondary education
1967-76	**early-mid 1980s:** parental choice of school (open enrolment)	**mid-late 1980s:** economic recession; GCSE (England and Wales) and Standard Grade (Scotland); steady rise in staying-on rates	**1990s:** second expansion of higher education

Table 2
Attainment of educational certificates by birth cohort and country of birth, among people aged 23-72 in 1999

Level of highest certificate % in column	England					
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76	All
None	47.5	36.4	25.2	9.1	5.1	22.8
Lower than lower secondary education	10.9	9.0	6.3	11.4	8.9	9.3
Lower secondary education[1]	11.9	15.9	17.5	23.4	21.9	18.6
Upper secondary education[2]	3.7	6.5	9.6	10.4	16.7	9.7
Higher education below degree[3]	20.1	24.6	29.9	28.3	29.3	26.9
Degree[4]	5.6	7.0	11.3	16.8	17.1	12.1
No information	0.3	0.4	0.2	0.6	1.0	0.5
Base of %	865	1173	1437	1784	1607	6866
	Wales					
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76	All
None	48.1	41.1	26.1	14.1	12.9	26.5
Lower than lower secondary education	11.1	7.4	5.1	9.6	8.9	8.2
Lower secondary education[1]	13.6	15.8	19.6	23.0	19.8	18.9
Upper secondary education[2]	1.2	9.5	8.7	11.1	18.8	10.2
Higher education below degree[3]	21.0	23.2	26.1	25.2	25.7	24.5
Degree[4]	3.7	3.2	13.8	16.3	13.9	11.1
No information	1.2	0.0	0.7	0.7	0.0	0.5
Base of %	292	322	398	427	345	1784
	Scotland					
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76	All
None	50.6	31.8	20.9	15.6	9.0	23.5
Lower than lower secondary education	9.7	8.5	7.4	3.9	4.5	6.5
Lower secondary education[1]	13.6	14.2	17.4	22.6	22.0	18.4
Upper secondary education[2]	6.5	9.5	16.5	16.7	18.4	14.1
Higher education below degree[3]	13.6	25.6	25.7	24.9	23.8	23.3
Degree[4]	5.2	9.0	11.7	16.3	22.4	13.6
No information	0.6	1.4	0.4	0.0	0.0	0.5
Base of %	331	387	493	613	524	2348

[1] For example, pass in GCSE, Standard Grade, O Level, O Grade, School Certificate, Lower Grade of Scottish Leaving Certificate.

[2] For example, pass in A level, Higher Grade, Senior School Certificate, Higher Grade of Scottish Leaving Certificate.

[3] For example, HND, HNC, nursing certificate, primary teaching diploma.

[4] Includes post-graduate degrees.

Weighted; base of % unweighted.

Table 3

Proportion with any attainment at upper-secondary level, or better, or with degrees by origin class and country of birth, among people aged 23-72 in 1999

Origin class	England			Wales			Scotland		
	upper sec. or better	degree	base of %	upper sec. or better	degree	base of %	upper sec. or better	degree	base of %
Professional (I,II)	71.3	27.2	*1714*	76.7	25.0	*266*	78.7	30.4	*442*
Routine non-manual (IIIa,b)	56.1	11.8	*919*	66.1	11.9	*181*	67.1	16.4	*331*
Self-employed (IVa,b,c)	46.3	11.2	*715*	33.9	5.4	*197*	52.4	11.7	*211*
Skilled (V,VI)	38.3	5.1	*1521*	38.2	6.9	*447*	43.2	8.8	*600*
Unskilled (VIIa,b)	29.6	3.1	*1136*	26.2	3.2	*478*	27.4	4.1	*509*
Total	49.3	12.5	*6005*	47.1	10.7	*1569*	52.6	14.3	*2093*

Omits people with no information on Goldthorpe class of origin or on educational attainment.

Categories of Goldthorpe scheme contributing to each summary category are shown in brackets.

Weighted; base of % unweighted.

Table 4

Results of log-linear models of origin class, education and birthplace

	Model	df	Education variable (Table 3)	
			At least upper secondary certificate	Degree
1	O, E, B, OE, OB, EB	8	18.6*	9.4
2	O, E, B, OE, OB	10	37.7*	27.0*
		(-8)	(-30.7)*	(-26.6)*
3	O, E, B, OE, OB, OEB	2	7.0*	0.36

Table shows L^2 values, based on unweighted data. An asterisk indicates p-value less than 0.05.

df = residual degrees of freedom.

O = origin class (Goldthorpe with 5 categories).

E = education (2 categories, holding or not holding particular levels of certificate as specified in the columns).

B = birthplace (England, Wales, Scotland).

Table 5
Proportion with any attainment at upper-secondary level, or better, by origin class, birth cohort and country of birth, among people aged 23-72 in 1999

Origin class	England				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	57.5	62.2	72.2	73.9	78.5
Base of %	*143*	*213*	*344*	*528*	*486*
Routine non-manual	42.6	45.8	58.4	52.3	68.6
Base of %	*60*	*104*	*208*	*288*	*259*
Self-employed	29.3	36.7	49.2	53.0	58.2
Base of %	*99*	*127*	*136*	*177*	*176*
Skilled	24.5	29.5	45.7	46.3	50.4
Base of %	*269*	*333*	*348*	*337*	*234*
Unskilled	13.8	29.4	29.5	40.1	40.5
Base of %	*198*	*257*	*266*	*257*	*158*
Total	30.1	38.7	51.8	56.1	64.2
Base of %	*769*	*1034*	*1302*	*1587*	*1313*
	Wales				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	66.7	60.0	86.2	82.5	75.0
Base of %	*22*	*33*	*58*	*85*	*68*
Routine non-manual	33.3	60.0	76.2	46.2	76.5
Base of %	*15*	*15*	*49*	*52*	*50*
Self-employed	36.4	50.0	22.2	30.8	36.4
Base of %	*40*	*34*	*35*	*49*	*39*
Skilled	24.0	29.2	40.6	48.3	47.6
Base of %	*78*	*88*	*109*	*98*	*74*
Unskilled	19.2	18.5	19.4	40.0	43.8
Base of %	*95*	*118*	*107*	*90*	*68*
Total	28.2	37.5	50.8	55.8	57.6
Base of %	*250*	*288*	*358*	*374*	*299*
	Scotland				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	53.3	80.0	80.9	79.1	82.6
Base of %	*26*	*47*	*85*	*139*	*145*
Routine non-manual	50.0	68.8	60.6	67.4	73.8
Base of %	*14*	*28*	*71*	*116*	*102*
Self-employed	35.3	47.8	61.9	55.6	57.1
Base of %	*38*	*38*	*44*	*53*	*38*
Skilled	25.5	43.1	48.3	46.9	52.5
Base of %	*110*	*112*	*128*	*148*	*102*
Unskilled	10.9	21.7	38.0	29.7	48.0
Base of %	*105*	*118*	*121*	*99*	*66*
Total	26.3	44.9	56.4	58.1	67.9
Base of %	*293*	*343*	*449*	*555*	*453*

Omits people with no information on Goldthorpe class of origin or on educational attainment.
Weighted; base of % unweighted.

Table 6
Association of class and attainment at upper secondary level or better, by origin class, birth cohort and country of birth, among people aged 23-72 in 1999

Origin class			England		
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
odds ratios compared with professional class:					
Routine non-manual	1.8	1.9	1.9	2.6	1.7
Self-employed	3.3	2.8	2.7	2.5	2.6
Skilled	4.2	3.9	3.1	3.3	3.6
Unskilled	8.5	4.0	6.2	4.2	5.4
Cramer's V for whole class-by-upper-secondary-education table within cohort	0.33	0.27	0.30	0.26	0.29
			Wales		
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
odds ratios compared with professional class:					
Routine non-manual	4.0	1.0	2.0	5.5	0.9
Self-employed	3.5	1.5	21.9	10.6	5.2
Skilled	6.3	3.6	9.1	5.0	3.3
Unskilled	8.4	6.6	26.0	7.1	3.8
Cramer's V for whole class-by-upper-secondary-education table within cohort	0.29	0.36	0.55	0.39	0.33
			Scotland		
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
odds ratios compared with professional class:					
Routine non-manual	1.1	1.8	2.8	1.8	1.7
Self-employed	2.1	4.4	2.6	3.0	3.6
Skilled	3.3	5.3	4.5	4.3	4.3
Unskilled	9.3	14.4	6.9	9.0	5.1
Cramer's V for whole class-by-upper-secondary-education table within cohort	0.32	0.41	0.31	0.35	0.30

Derived from Table 5.

Table 7
Proportion with degree,
by origin class, birth cohort and country of birth, among people aged 23-72 in 1999

Origin class	England				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	18.5	20.1	23.2	31.3	33.3
Base of %	*143*	*213*	*344*	*528*	*486*
Routine non-manual	8.8	9.7	12.1	12.1	13.0
Base of %	*60*	*104*	*208*	*288*	*259*
Self-employed	3.2	8.3	13.5	16.1	12.7
Base of %	*99*	*127*	*136*	*177*	*176*
Skilled	2.3	2.9	5.5	7.8	9.0
Base of %	*269*	*333*	*348*	*337*	*234*
Unskilled	2.3	0.8	2.3	8.0	2.3
Base of %	*198*	*257*	*266*	*257*	*158*
Total	6.0	7.2	11.4	17.2	18.4
Base of %	*769*	*1034*	*1302*	*1587*	*1313*
	Wales				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	33.3	5.0	23.3	37.5	25.0
Base of %	*22*	*33*	*58*	*85*	*68*
Routine non-manual	-	-	19.0	15.4	5.9
Base of %	*15*	*15*	*49*	*52*	*50*
Self-employed	9.1	9.1	10.0	-	8.3
Base of %	*40*	*34*	*35*	*49*	*39*
Skilled	-	-	12.5	3.6	19.0
Base of %	*78*	*88*	*109*	*98*	*74*
Unskilled	3.7	3.7	3.2	4.0	6.3
Base of %	*95*	*118*	*107*	*90*	*68*
Total	5.6	3.5	13.7	16.0	14.0
Base of %	*250*	*288*	*358*	*374*	*299*
	Scotland				
birth cohort	1927-36	1937-46	1947-56	1957-66	1967-76
Professional	13.3	22.6	29.8	31.3	37.1
Base of %	*26*	*47*	*85*	*139*	*145*
Routine non-manual	37.5	-	12.1	15.2	21.4
Base of %	*14*	*28*	*71*	*116*	*102*
Self-employed	5.9	8.7	14.3	11.1	21.4
Base of %	*38*	*38*	*44*	*53*	*38*
Skilled	3.9	11.9	6.6	11.1	12.5
Base of %	*110*	*112*	*128*	*148*	*102*
Unskilled	-	3.3	3.9	5.6	8.0
Base of %	*105*	*118*	*121*	*99*	*66*
Total	5.8	9.5	12.7	16.7	23.6
Base of %	*293*	*343*	*449*	*555*	*453*

Omits people with no information on Goldthorpe class of origin or on educational attainment.

Weighted; base of % unweighted.

Table 8

Results of log-linear models of origin class, education, birthplace and birth cohort

	Model	df	Education variable	
			At least upper secondary certificate (Table 5)	Degree (Table 7)
1	all main effects, all 2-way interactions	96	99.4	87.7
		(-16)	(-16.5)	(-13.6)
2	all main effects, all 2-way interactions, OEC	80	82.9	74.1
3	all main effects, all 2-way interactions, all 3-way interactions	32	28.5	25.0
4	O, E, C, B, OE, OB, OC, CB	102	421.2*	198.9*
		(-16)	(-225.4)*	(-93.2)*
5	O, E, C, B, OE, OB, OC, CB, OEC	86	195.8*	105.7
6	O, E, C, B, OE, OB, OC, CB, OEB, OEC, OCB	46	135.1*	48.4
		(-32)	(-23.7)	(-24.1)
7	O, E, C, B, OE, OB, OC, CB, OEB, OEC, OCB, OECB	14	111.4*	24.3*

Table shows L^2 values, based on unweighted data. An asterisk indicates p-value less than 0.05.

df = residual degrees of freedom.

O = origin class (Goldthorpe with 5 categories).

E = education (2 categories, holding or not holding particular levels of certificate as specified in the columns).

B = birthplace (England, Wales, Scotland).

C = birth cohort (5 categories: 1927-36, 1937-46, 1947-56, 1957-66, 1967-76).