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The iron law of hierarchy? Institutional differentiation in UK higher education

Linda Croxford and David Raffe
Centre for Educational Sociology
University of Edinburgh

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Abstract

This paper maps the main dimensions of differentiation among institutions and ‘faculties’ (subject areas within institutions) of higher education in the UK. It does so through a principal components analysis based on the characteristics of applicants and entrants. A single status dimension accounts for a quarter of the variation, and is associated with the social class, educational background, age (under 21) and non-local origin of students. This dimension is very stable over time and across England, Wales and Scotland. It is robust in the face of alternative specifications. The paper argues that this institutional hierarchy is deeply embedded in wider social structures and reflects the social reproduction role of higher education. Other, somewhat less stable dimensions are associated with students’ ethnic background and domicile.

Keywords: institutional diversity; subject differences; social reproduction; social class; ethnic inequalities

Introduction: differentiation in higher education

Formally, higher education (HE) in the United Kingdom (UK) became a unified system when the binary division between universities and polytechnics was abolished in 1992. In practice, it has continued to be highly differentiated (Scott 1995). All HE institutions have a similar formal status but informal differences in function and standing are widely recognised. Huisman, Meek and Wood (2007) concluded that the UK was the most diverse of the ten systems they studied, but noted that ‘remarkably few studies ... actually take stock of the level of diversity’ (p.563); even fewer systematically examine the *nature* of diversity. In this paper we examine the differentiation of HE in the UK by identifying the main dimensions along which institutions vary. In particular, following analysts such as Teichler (2007) and Leuze (2011), we explore the extent to which institutional differentiation is vertical or horizontal: that is, the extent to which it can be mapped along a single vertical dimension, associated with the status of institutions and their capacity to attract well-qualified and high-status students, as opposed to one or more ‘horizontal’ dimensions.

Institutional differentiation, and in particular the extent to which institutions are differentiated in a hierarchy, is important for several reasons. First, it is at the heart of long-standing debates about the purposes of HE and whether these are best achieved through a division of function among institutions (Trow 1974; Teichler 2007; Scott 2008). The benefits of such a division of function may be undermined if it is hierarchical, and especially if the hierarchy is informal; if some functions and the institutions that perform them have higher status than others, the system as a whole will be vulnerable to mission drift.

Second, market-led policies, such as those currently pursued in England (BIS 2011), may have unintended consequences if institutions are differentiated in a hierarchy linked to status and positional advantage. Education markets tend to reinforce academic hierarchies; rather than encourage institutions to compete on the quality and relevance of their programmes, markets may simply strengthen the position of institutions with existing reputational advantage (Gewirtz, Ball and Bowe 1995; Lauder et al. 1999; Brown 2013).

Third, institutional differentiation is central to the social reproduction role of HE and to efforts to widen participation. Many countries which have widened participation in HE have increased lower-class enrolment in particular institutional sectors (Arum, Gamoran and Shavit 2007; Iannelli, Gamoran and Paterson 2011). In a diverse system some institutions may give priority to attracting students from under-represented groups, and design their programmes and structures accordingly. However, while institutional diversity may widen access to HE as a whole, it also results in disadvantaged groups being under-represented in institutions with higher status and positional value, whose graduates enjoy higher labour-market returns (Chevalier and Conlon 2003; Hussain, McNally and Telhaj 2009; Sutton Trust 2010; Boliver 2013). As HE expands, the mere fact of going to university no longer ensures

access to future elites; the type of institution attended also matters. Lucas' (2001) concept of 'effectively maintained inequality' (EMI) predicts that diversity within a stage of education, such as HE, performs the socially-selective role that mere participation in that stage performed when overall levels of participation were lower. Another sociological perspective uses concepts of cultural capital and habitus to analyse the role of institutional differentiation in social reproduction (Bourdieu and Passeron 1977). A 'process of class-matching ... goes on between students and university: a synchronisation of familial and institutional habitus' (Reay, David and Ball 2005: 94). Students for whom HE as a whole represents an alien and uncertain world may apply to institutions where they are more likely to fit in socially and culturally (Forsyth and Furlong 2000; Reay, David and Ball 2005). However the same process of class-matching also facilitates access to elite institutions by middle-class students, who have superior cultural and social capital and better information.

These sociological perspectives suggest, not only that institutional differentiation in HE is hierarchical, but also that institutional hierarchies are rigid and self-perpetuating. The EMI perspective predicts that institutions with higher status and positional value attract 'good' students who are in turn more attractive to employers who therefore recruit from these institutions and reinforce their positional advantage. The cultural perspective predicts that institutions attract the types of students most likely to sustain their institutional habitus. However, this 'iron law of hierarchy' may be softened if there are multiple hierarchies or horizontal differentiation within HE. For example, educational qualifications and social class have at least partly independent influences on the institutional choices of applicants (Forsyth and Furlong 2000; Chowdry et al. 2008). This suggests that institutions may form two different hierarchies: an academic hierarchy headed by institutions which attract the best-qualified students, and a social hierarchy headed by institutions which attract the most socially-advantaged students. UK Universities also vary in the ethnic mix and the ages, national backgrounds and (to a lesser extent) gender balance of their students (Croxford and Raffe 2013). Students' institutional choices are also influenced by other factors including school type and geography (Mangan et al. 2010). These factors may generate plural hierarchies or horizontal differentiation which moderates the role of vertical differentiation in social reproduction.

Subject differences may contribute to this pluralism. The labour-market returns to HE tend to vary across subject areas more than across institutions (Futuretrack 2012). Representatives of the newer UK universities argue that institutional hierarchies have become less important, and that more significant differentiation exists among subjects within institutions, as subject departments or faculties establish distinct reputations. The social and ethnic mix of students varies across subject areas as well as across institutions, and some studies find that less advantaged students tend to choose subjects with greater vocational relevance and a higher labour-market return, in apparent contrast to the

expectations of EMI (Forsyth and Furlong 2000; Chowdry et al. 2008; Iannelli, Gamoran and Paterson 2012).

Research objectives

In this paper we present an exploratory study to identify the dimensions of differentiation within HE in the UK and to examine how these dimensions have changed over time and across the UK's four 'home countries'. We draw on sociological perspectives which emphasise the role of differentiation within HE in reproducing social inequalities; we therefore analyse this differentiation in terms of the educational, social, ethnic and demographic characteristics of students applying to, or entering, full-time undergraduate programmes in different faculties and institutions. Previous studies have mapped institutional differentiation on the basis of variables other than student characteristics, such as the history, size, organisational structure, resource levels, subject mix and modes and levels of study, although some studies have also used indicators of student background. Many of these studies have compared the level of diversity across countries or over time (Huisman, Meek and Wood 2007; Ramsden 2012) or constructed typologies of institutions (King 1970; Dolton and Makepeace 1982; Tight 1996, 2007). Our aim in this paper is neither to quantify the level of diversity nor to allocate institutions to types or clusters, but rather to identify and describe the main dimensions of difference along which institutions can be mapped. And unlike most previous analyses we examine differentiation across subject areas as well as institutions. Subject areas within each institution are our main units of differentiation. We refer to these as 'faculties' although they do not necessarily correspond to the ways in which institutions are organised in practice. We define seven broad subject areas: medicine, veterinary medicine and dentistry; subjects allied to medicine; science; engineering and technology; social science and law; arts; and combined and 'other' subjects. We test this approach by comparing analyses based on faculties with analyses based on institutions, considered as whole entities.

Our analysis also tests the power of sociological perspectives which see HE as crucially shaped by its role of social reproduction or social selection. As we have seen, these perspectives predict a strong and self-perpetuating hierarchy which is deeply embedded in the wider social structure; our analysis tests this prediction. Other perspectives suggest that the increasing diversity of the functions, clients and contexts of HE herald an increasingly complex and flexible future in which traditional hierarchies lose their significance (Teichler 2007; van Vught 2009). Technological changes and new models of learning, along with other recent trends such as the expansion of HE, institutional restructuring, internationalisation and marketisation may reinforce this process. However, the precise impact of these trends is not certain. Restructuring may either establish strong specialist institutions with distinct missions or create multifunctional universities which compete only on status; marketisation may reinforce academic hierarchies or be engineered to produce pluralist outcomes (Hirsch 1994); and internationalisation may encourage a more refined

division of labour between institutions or it may simply reinforce the uniform value system underlying global institutional rankings. In other words, many current developments may simply strengthen the existing institutional hierarchy rather than introduce a more pluralist system.

Data and methods

We use administrative data from the Universities and Colleges Admissions System (UCAS) covering six cohorts of applicants to full-time undergraduate programmes – but not Further Education colleges – in 1996, 2000, 2004, 2006, 2008 and 2010. Almost all applications to such programmes in HE institutions are made through UCAS; however, the analyses exclude Further Education colleges which more often recruit through other channels. Each UCAS applicant makes up to five applications (six before 2008) in an annual round. We base analyses either on applicants or on entrants, whom we identify as applicants who were formally accepted for a place through UCAS. Data on their social, demographic and educational backgrounds were collected by UCAS during the application process. We aggregate these data by cohort and faculty. For each background variable, therefore, each institution could have up to 42 records for applicants (and another 42 records for entrants) because there are up to seven subject faculties per cohort and up to six cohorts per institution. Institutions which became, or ceased to be, HE institutions during the period, for example as a result of upgrading or merger, will be represented by fewer than six cohorts. To minimise ‘noise’ due to small numbers we omit records based on fewer than 100 applications or 20 entrants, respectively, to the faculty in the relevant cohort. We set these thresholds in order to make the analyses of applicants and of entrants more comparable by excluding a similar proportion of ‘small’ faculties from each; the modal applicant made five applications. We used institutional identifiers to classify institutions by location, status and history, but under our contract with UCAS we agreed not to identify individual institutions.

Table 1 summarises the student background variables used in the analyses, together with their overall mean and standard deviation across faculties and cohorts for applicants and entrants respectively. Except for the mean prior qualification score, each variable measures the percentage of applicants/entrants with the specified characteristic. Applicants or entrants with missing information on the relevant variable are excluded from the data on which these percentages are based. The N’s in Table 1 refer, not to the number of individual students, but to the number of cohorts-within-faculties; these are the units of analysis on which the means in Table 1, and the principal components analyses reported below, are based.

Information on domicile, sex and age is available for all applicants. EU domicile is based on the status of the country when the individual made their UCAS application. Applicants from the rest of the UK (RUK) are those domiciled in a different home country from that of the institution; applicants from another UK region are domiciled in a different home country or

in a different Government Office Region of England. Information on ethnicity is based on self-reports, and is available for most UK-domiciled applicants, but not for applicants from outside the UK.

[Table 1 about here]

The final set of variables in Table 1 is restricted to UK-domiciled entrants aged under 21; the equivalent information for older age groups either has more missing information or is collected on a different basis. Information about social class is derived from a question which asks under-21s to state the occupation of the parent, step-parent or guardian ‘who earns the most’. Their responses are coded into the Registrar General’s (RG) classification in 1996 and 2000 and the National Statistics Socio-Economic Classification (NS-SEC) from 2004 onwards. We have simplified these to produce four ‘social classes’. Social class 1 in Table 1 refers to ‘RG I: Professional’ in 1996 and 2000 and to ‘NS-SEC 1: Higher managerial and professional’ in 2004-2010. Social class 4 refers to ‘RG IIIM, IV and V: Manual’ in 1996 and 2000 and to ‘NS-SEC 5, 6 and 7: Routine and manual: lower supervisory and technical, semi-routine and routine’ in 2004-2010. These class measures are not directly comparable across the change in classification; however, we include them because of their theoretical importance, because they express very similar constructs and because in practice they show remarkable continuity in the empirical analyses.

The prior qualification score is based on the UCAS point score in 1996 and 2000 and the UCAS tariff from 2004 to 2010; both of these were summary measures of attainment based on grades and numbers of qualifications. In order to create a single measure that took account of credential inflation and differences between national systems we derive normal scores (with a mean of 0 and standard deviation of 1) within each home country and cohort.

We conduct a principal components analysis to identify the main dimensions of variation among faculties, using varimax rotation to ensure that components are unrelated. (Analyses using oblimin rotation, which does not impose this constraint, find low correlations among the components; all are smaller than 0.18, except for the correlation between the two ‘ethnic’ components which is 0.30.) For our initial analyses we retain all components with eigenvalues greater than 1 (based on Kaiser’s criterion that an eigenvalue of 1 represents a substantial amount of variation: Field 2005, 633). For subsequent comparative analyses by cohort and home country we restrict the dimensions to four in order to aid comparability.

Different combinations of variables were tested in a number of preliminary analyses; Table 1 lists those finally selected. The variables we dropped include the percentage of applicants/entrants who reported themselves as disabled, which did not contribute to any component that could easily be interpreted. We also dropped variables with a very skewed geographical spread. For example, an analysis with variables representing a wider range of

school types generated a component that was strongly associated with grammar schools and with institutions in Northern Ireland. However, as we see below there is a strong geographical aspect to some of the components, even with the variables we have selected. Table 1 also displays the communality of each variable, that is, the percentage of variance that is shared with other variables.

Results

Our initial analyses result in the extraction of five components based on applicants and four based on entrants. These components and their factor loadings are shown in Table 2, in which the more important variables (with positive or negative loadings greater than 0.40) are highlighted.

[Table 2 about here]

The first four components (or dimensions) from the analysis of applicants are very similar to the four components from the analysis of entrants. In each case the first component accounts for 24% of variance and is strongly associated with social and educational status. The highest loadings relate to high prior qualification scores (0.92 and 0.91 for applicants and entrants respectively), the percentage from social class 1 (0.91 and 0.87), and the percentage from independent schools (0.85 and 0.84). Conversely, the percentage from social class 4 (-0.90 and -0.85) and the percentage from the college sector (-0.71 and -0.67) have high negative loadings. Other variables with positive loadings on the status component are the percentage of students from other regions (0.50 and 0.63) and the percentage aged under 21 (0.43 and 0.62).

None of the ethnic variables loads strongly on the status dimension. Instead, the next two components represent the ethnic diversity of UK HE. The second component is strongly related to the percentages of (UK-domiciled) students from black (African or Caribbean), Bangladeshi or mixed backgrounds. The third component is related to the percentages of applicants or entrants from Asian, and especially Indian or Pakistani, backgrounds. The fourth component is associated with the percentages of students who are male, from overseas or other EU countries, or from Chinese backgrounds. The fifth component, from the analysis of applicants only, is associated with the domicile of applicants, and specifically those from other home or EU countries, or from the same region of the UK.

The components are very similar whether based on the characteristics of applicants or of entrants. The black-and-Bangladeshi component accounts for more variance when based on the characteristics of applicants than of entrants; this suggests that the ethnic segregation of UK HE is generated by the preferences of applicants rather than by the admissions process. The other main differences between the analyses based on applicants and on entrants relate to EU and RUK domicile, possibly reflecting the fact that relatively

few EU and RUK applications lead to entries. In the rest of this paper we focus on the dimensions as revealed by analyses of entrants.

We summarise our conclusions from Table 2. Whether based on applicants or entrants, our analysis finds no evidence of separate academic and social hierarchies, but shows a single status dimension which combines educational and social background. This dimension is not strongly associated with ethnic background, but the analysis finds two further dimensions associated with the percentages of students from black and Bangladeshi backgrounds and from Asian backgrounds respectively.

[Table 3 about here]

Table 3 shows the average score on each component of different institutional sectors, subject areas and cohorts, and of institutions in each home country. (The patterns for components based on applicants are very similar.) The status dimension is strongly associated with the institutional hierarchy defined by the Russell Group (a membership organisation of large ‘research-intensive’ universities), other pre-1992 universities and post-1992 universities (former polytechnics and other institutions which became universities after the binary division was abolished in 1992). This hierarchy represents ‘the orthodoxy ... when classifying HEIs’ in the UK (Purcell, Elias and Atfield: 1) and has a strong and stable correlation with the status and attractiveness of institutions (Raffe and Croxford 2013). Among the subject areas medicine, dentistry and veterinary medicine have the highest scores on the status dimension, and subjects allied to medicine have the lowest scores, but subject differences in status are relatively small. Average scores on the status dimension are similar across cohorts. They are highest in England and lowest in Northern Ireland and Wales, but this may partly reflect the tiny proportions of Welsh and Northern Irish students from independent schools, a variable with a high loading on the (UK-wide) status dimension.

A further analysis which regresses the status component on the four variables in Table 3 confirms that institutional sector and subject area are independently associated with status and that the differences across institutional sectors are much larger than the differences across subject areas (table not shown). When interactions with cohort are also included, the analysis finds no evidence of change in the status hierarchy of institutional sectors, confirming earlier analyses of the stability of this hierarchy (Raffe and Croxford 2013). It also finds little evidence of change in the status differences among subjects, except for engineering and technology whose average scores on the status component rose over the period, and subjects allied to medicine whose status scores declined after 2006. The latter trend may be associated with the inclusion, from 2008, of nursing and related fields among the programmes that recruited through UCAS.

Neither of the ethnic dimensions is strongly associated with institutional sector, although there is a slight association between the black-and-Bangladeshi dimension and the post-1992 universities. Neither dimension is very strongly linked to subject areas, although faculties in subjects allied to medicine tend to score highly on the black-and-Bangladeshi dimension, and science faculties have high scores (and arts faculties have low scores) on the Asian dimension. Average scores on the black-and-Bangladeshi dimension tend to rise across the cohorts, reflecting the rising proportion of UK-domiciled applicants and entrants to UK HE from some ethnic minorities over the period of the study (Croxford and Raffe 2011). The main variation on the two ethnic dimensions is geographical. Faculties in London have the highest average scores on these components, and those in the three devolved countries the lowest. The scores vary much less across English regions outside London, not shown in the table. The fourth dimension, associated with the percentages of students who are male, from other EU or overseas countries or from Chinese backgrounds, is strongly linked with subjects, and in particular with engineering and technology faculties.

The fact that the first three (social and ethnic) dimensions are not strongly associated with subject areas suggests that they reflect differences between institutions more than differences between subjects. This is confirmed by repeating the entrants analysis in Table 2 using data on whole institutions (or, more precisely, on cohorts-within-institutions: table not shown). This produces a status component almost identical to that in Table 2; the main difference is a slightly higher loading (0.40) for the percentage of overseas students, just taking it into the highlighted category. The two ethnic dimensions are only slightly different; the black-and-Bangladeshi dimension has a smaller loading (0.36) for students from 'other Asian' backgrounds, and the Asian dimension has higher loadings (0.45 and 0.47 respectively) for students from black African or mixed/other ethnic backgrounds.

We conclude that differences between institutions are more important than differences between subject areas with respect to the first three dimensions (which are also the most robust, stable and easily interpreted dimensions) of differentiation in UK HE. The fourth dimension in Table 2, associated with male, non-UK and Chinese-background students, does not correspond closely to any dimension from the institution-level analysis. The institution-level analysis shows two further components with eigenvalues greater than 1: one is associated with EU and overseas students, and the other with the proportion of male, non-local and former college students.

Change over time

Table 3 shows that average scores on some components change across the six cohorts of the study, reflecting the changing composition of entrants to HE institutions in the UK. This raises the question of whether the dimensions described in Table 2 have themselves been stable over this period. To test this, we run the analysis separately for each cohort, restricting the number of components to four in order to maximise comparability across

cohorts. The analyses are included in an Appendix available from the authors. They show that:

- The status dimension is stable across all six cohorts. In each cohort it accounts for about a quarter of total variation across faculties and it is associated with prior qualifications, social class, age (under 21), independent-school backgrounds and domicile in another region, and negatively with college backgrounds. The factor loadings are very similar in each case, despite the fact that the precise population of institutions varies from cohort to cohort.
- In no cohort is there evidence of separate educational and social status dimensions.
- The status dimension is only weakly associated with the ethnic composition of students.
- In each cohort there are separate dimension(s) associated with ethnicity. These are less stable than the status dimension; in most cohorts we find separate dimensions for black students and for Asian students, but the precise loadings vary.
- In each cohort there is a component associated with male, EU and overseas students, and (more weakly) with students from Chinese backgrounds.

Comparing the home countries

HE within the UK is administered within four separate jurisdictions, which differ in size, socio-economic context and institutional legacy. As shown by Table 3 average scores on the components vary across institutions in the different home countries, reflecting differences in the social, ethnic and educational composition of their students. However, the components themselves are based on applicants and entrants to all HE education institutions in the UK, a large majority of which are in England. Since parliamentary devolution in 1998-99 the UK government (responsible for HE in England) and the governments of Northern Ireland, Scotland and Wales have pursued contrasting policies for the institutional structures of their HE systems (Bruce 2012). Our final analysis asks: to what extent do these policy differences override the common tendencies expressed by the 'iron law'? Are the same components found in each home country?

We exclude Northern Ireland which has only two universities and up to five HE institutions in total (fewer in some cohorts). The smallest number of institutions in any cohort in Wales, Scotland and England is 12, 17 and 130 respectively.

[Table 4 about here]

In Table 4 the number of components is restricted to four in each country in order to maximise comparability. The English components are almost identical to those identified in the UK-wide analyses in Table 2. This is not surprising, given that a majority of the faculties covered by the former analysis were in English institutions.

The status dimension is found in Wales and Scotland, where it accounts for about the same proportion of variation as in England and is associated with the same variables (in Wales and Scotland the 'percentage of RUK students' and the 'percentage of students from another UK region' measure the same thing). The percentage of students from Indian backgrounds also has a positive loading (0.40 and 0.39 respectively) on the status dimension in Wales and Scotland. In none of the three countries is there evidence of separate social and educational status hierarchies, and in each country there is a single status component (the partial exception is the third component in Wales, which is associated positively with students in social class 1 and negatively with those from colleges, but this too combines educational and social indicators).

In both Wales and Scotland there is a further component associated with students from Asian backgrounds, similar to that in England although it accounts for a smaller proportion of variance and in Scotland it is also associated with students from African backgrounds. The other components are less consistent across countries. The third Welsh component is associated with students from 'other Asian', African and 'mixed/other' backgrounds. The fourth English component, associated with the percentages of students who are male, from other EU or overseas countries or from Chinese backgrounds, is matched by two separate components in Scotland (components 2 and 4 in Table 4); the nearest equivalent in Wales is less strongly associated with overseas or Chinese students.

Thus, HE is vertically stratified in each country of Great Britain, with an almost identical status component in each case; but the three countries differ more in relation to other axes of differentiation.

Discussion

Our analysis confirms that UK HE is vertically differentiated. Furthermore, it provides evidence for our contention that an iron law of hierarchy – unchanging, pervasive, and empirically robust – governs HE institutions in the UK. Subjects and institutions vary along a single dimension of status, associated with the educational backgrounds, social class, non-local origins and (young) age of many students. This dimension is reflected equally in the characteristics of entrants and of applicants, and it appears whether we look at faculties or at whole institutions. It is correlated with commonly-used indicators of institutional status (such as Russell Group membership or pre-1992 foundation) but it is only weakly associated with subjects (mainly with medicine) or with the ethnic backgrounds of students. It has been remarkably stable over time. It is found in almost identical form in England, Wales and Scotland, and it is the most important dimension of variation within each country.

The main sources of horizontal differentiation relate to ethnicity and domicile. These dimensions are less stable over time or across the home countries. Nevertheless, in England there has been a reasonably stable dimension associated with students from Asian

backgrounds, and another associated with students from black and Bangladeshi backgrounds; the first of these dimensions is found also in Wales and Scotland. These dimensions have a strong geographical basis, being associated with institutions in London, but they are only weakly associated with institutional sectors or subjects. Finally, our analysis of variation among faculties reveals a fourth dimension associated with male, non-UK or Chinese-background students, linked to engineering and technology faculties.

A principal components analysis is only as good as the variables on which it is based. Our analyses might have revealed other dimensions of variation had we been able to use data on other student characteristics, such as a preference for living in large cities, the strength of family ties, attitudes to risk, subjects studied at school or types of qualifications obtained (Clayton, Crozier and Reay 2009; Evans 2009; Mangan et al. 2010). However, while such variables may be associated with further dimensions of horizontal differentiation, there may be less to discover about vertical differentiation. The iron law of hierarchy, we speculate, is already revealed by these analyses.

Our analysis provides support for the sociological perspectives outlined earlier. Differentiation in HE is based on a hierarchy that is strong, pervasive and persistent, despite the effects of expansion, restructuring, marketisation and internationalisation, and despite divergent policies across the UK's home countries, because it is deeply embedded in social structures and, in particular, in wider processes of social selection and social reproduction. Most sociological research in this area has examined how the way in which HE is differentiated shapes processes of inequality and social reproduction. Our research, by contrast, suggests that HE's role of social reproduction in turn shapes the way in which it is differentiated. Future studies will be able to test whether the 2012 fee rises in England have any more impact on differentiation than earlier changes in policy and funding.

However, while our analysis supports a sociological interpretation of the forces shaping HE, it does not differentiate clearly between the two sociological perspectives discussed earlier: the rational-action perspective associated with EMI, and the culturalist perspective which stresses familial and institutional habitus. Both predict a strong, stable and self-reinforcing hierarchy of the kind revealed by our analysis. The aspects of horizontal differentiation which we have identified, associated with ethnicity and domicile, could also be explained in terms of either perspective. They could either reflect the matching of institutions and students based on cultural dispositions and preferences, or they could reflect more instrumental calculations associated with the costs of travel, access to extended family support, the reduced risk of discrimination in institutions where minority groups are more numerous, and so on. Indeed, it may be wrong to see rationalist and culturalist perspectives as alternatives. Not only may they describe parallel and mutually reinforcing aspects of the process of social reproduction, but up to a point they may describe the same causal

processes, for example if cultural preferences are used to legitimate more instrumental and 'rational' choices.

Could the 'iron law' be repealed? Our conclusion that the institutional hierarchy is deeply embedded suggests that it could not easily be changed by modifications to the UCAS admissions procedures, or even to the recruitment practices of universities. One way to promote a more pluralist HE system might be to strengthen the existing aspects of horizontal differentiation. For example, the varying ethnic composition of universities might be regarded, not as an aspect of segregation to be regretted, but as a welcome counterbalance to a hierarchy based on social and educational status. Encouraging universities to strengthen their local or regional identity might also weaken their hierarchical ordering, as may be observed in many other countries, although in the UK this could merely strengthen tendencies for high-status universities to recruit (inter)nationally and lower-status institutions to recruit locally.

It is possible that subject differences may be a more important source of pluralism. Although we have not found a strong association between broad subject areas and the status hierarchy within HE, our analysis covers only part of the role of HE in social reproduction. It refers to students' origins but not to their destinations. Some studies suggest that the subject areas which recruit the highest-status and most advantaged students do not always lead to the highest-status and best-rewarded jobs or positions in society (Chowdry et al. 2008; Iannelli, Gamoran and Paterson 2012). To the extent that this is true, this may be the main source of pluralism in the process of social mobility and social reproduction. Future analyses, therefore, should link the dimensions of variation in HE – ideally based on a wider range of student characteristics than we have been able to use here – with the employment, earnings and occupational destinations of graduates from different faculties.

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