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Classifying pupils by where they live : how well does this predict variations in their GCSE results?

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Classifying pupils by where they live : how well does this predict variations in their GCSE results?

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Abstract

Classifying consumers according to the type of neighbourhood in which they live is now standard practice among most of Britain's successful consumer facing organisations. In recent years these 'geodemographic' classifications have become increasingly used in public sector applications. Their use has made it possible not just to gain a clearer understanding of the level of inequalities that exist between different types of neighbourhood but also to understand which policy interventions are likely to be most successful in different localities throughout the country.

This paper summarises key findings resulting from the appending of the UK Mosaic neighbourhood classification system to the records of the Pupil Level Annual School Census. The most significant of these findings is that other than the performance of the pupil at an earlier key stage test the type of neighbourhood in which a pupil lives is a more reliable predictor of a pupil's GCSE performance than any other information held about that pupil on the PLASC database.

Analysis then shows the extent to which the performance of pupils from any particular type of neighbourhood is also incrementally affected by the neighbourhoods from which the other pupils in the school they attend are drawn. It finds that whilst a pupil's exam performance is affected primarily by the social background of people he or she may encounter at home, the social background of fellow school pupils is of only marginally lower significance.

These findings suggest that so long as pupils' GCSE performances are so strongly affected by the type of neighbourhood in which they live, a school's league position bears only indirect relationship to the quality of school management and teaching. A better measurement of the latter would be a league table system which took into account the geodemographic profile of each school's pupil intake.

The paper concludes with discussion of the relevance of these findings to the sociology of education, to the debate on consumer choice in public services, to the general appropriateness of adjusting public sector performance metrics to take into account the social mix of service users and to parental strategies in the educational sector in particular

Key words: Choice; neighbourhoods; geodemographics; school performance; key stage tests

1 : Introduction

The purpose of this paper is to contribute to two debates. One is quite specific and very practical, the way in which 'league table' rankings are used to represent the quality and effectiveness of teaching in different schools. The other is more theoretical, namely an

understanding of the mechanisms whereby residents segregate themselves within urban settings and how this leads to, or indeed is partly caused by, spatial inequalities in the level of pupil and school attainment.

The evidence which we believe can usefully contribute to these two debates results from the fusion of two previously un-connected datasets, the geodemographic postcode classification system Mosaic, a proprietary product of the information services company Experian, and the Department for Education and Skills (DfES) maintained Pupil Level Annual School Census (PLASC). Whilst the PLASC database is rich in information about pupil performance and, to a lesser extent, various manifestations of supposed social disadvantage, it has previously lacked the ability to describe variations in pupil performance in terms of concepts used by sociologists, geographers or students of urban structure to describe processes that contribute to or result from residential segregation. As a result most debate on educational inequalities has been conducted using the concept of multiple deprivation, which as we will show has only a modest ability to explain differences in the statistical sense of the word and very little value as a contributor to understanding of social processes.

Because relatively few readers are likely to be acquainted with the principles of geodemographic classification, aware of the content of the PLASC database and familiar with the statistical methods used in this paper to assess school performance, it seemed to us that it might be appropriate to organise the content of the paper as follows. First we explain the origins of neighbourhood classification systems and the reasons why neighbourhood has become an effective alternative to occupational based measures for the analysis of behavioural differences; then we introduce the Pupil Level Annual School Census. We then summarise the key findings arising from our analysis of GCSE results by type of neighbourhood. This then leads to a more discursive commentary on the relevance of the findings to broader debates both about the relationship between educational provision and residential segregation and to a more politically oriented discussion on the role of choice in improving parent satisfaction and school standards.

2 : The reasons for using neighbourhood classification as a tool for understanding variations in behavioural characteristics

Research surveys have, for many decades, been the principal method whereby organizations evaluate the effectiveness of their service delivery strategies in relation to the opinions and preferences of their client base. This is as much the case in the commercial sector as it is in government.

Traditionally research surveys have been based on questionnaires. Typically the questions contained in a questionnaire belong to two types. On the one hand the questionnaire is likely to contain a set of general questions designed to establish the 'demographic' characteristics of the respondent. These questions might enquire about a respondent's gender, age, household composition, ethnic group, occupation and income, questions that are likely to be broadly similar from one survey to another. Either before or after these questions are asked the questionnaire is likely to contain a number of other 'behavioural' questions. These vary from survey to survey according to its focus.

Example of such a focus might be categories of household expenditure, experience of crime, newspaper readership and television viewing habits, party political preferences and so on.

Once the results of the questionnaire have been organized in electronic form it is typical for research analysts to tabulate responses to demographic questions against responses to behavioural questions. For example one may wish to tabulate differences in crime victimization by gender, national newspaper readership by income or political party support by social class.

With the establishment by the Royal Mail of the UK postcode system in the late 1980s, a number of market research organizations began to record and store the postcodes of their survey respondents. Given the development at that time of neighbourhood classifications based on residential postcodes, the opportunity arose for the type of neighbourhood in which a survey respondent lived to be established from his or her postcode and thus appended as an additional field for use in survey analysis (Baker et al, 1979).

Initially it was assumed that the type of neighbourhood in which a respondent lived would be much less predictive than the respondent's occupational status. Empirical evidence has subsequently suggested otherwise. According to Webber (2004a) the type of neighbourhood in which a respondent lives is typically a better predictor of behaviour than their occupation, even where the behaviour is one which one would suppose to be more clearly related to status than to age, ethnicity of life stage.

There are a number of reasons why neighbourhood may have become a more statistically reliable discriminator than either occupational, educational or income based demographics.

In so far as behaviours are socially influenced it could well be the case that residents of intermediate status living in high status neighbourhoods adopt the behavioural characteristics of their more affluent neighbours and vice versa. There is strong evidence to suggest this is an influential factor in party political support (Longley et al 2003).

An alternative explanation is that neighbourhood are self selecting – in other words people choose to live among people with similar behaviours to their own, irrespective of their occupation status.

Another set of possible reasons relates to the fragmentation of the middle classes and the increasing de-alignment of income, party support, property ownership and terminal education age. This results in the formation of some types of neighbourhood which attract those members of the middle class who, notwithstanding high levels of education, have collectivist political attitudes and moderate incomes whilst other types of neighbourhood attract people with money who attach priority to the material symbols of success but who have nevertheless not personally benefited from particularly high levels of education. Butler (2003) shows how these differences are reflected in the different areas of middle class gentrification in inner London. Savage et al (Savage, Bagnall et al.

2005) have also argued in relation to their study of the middle class in four towns around Manchester that residence is now a crucial element to the middle class sense of 'belonging'. Indeed, they suggest that it is now the 'incomers' as opposed to the 'locals' who have the greatest sense of being there – because they made the choice.

> One's residence is a crucial, possibly *the* crucial identifier of who you are. The sorting processes by which people chose to live in certain places and other leave is at the heart of contemporary battles over social distinction. Rather than seeing wider social identities as arising out of the field of employment it would be more promising to examine their relationship to residential location.
>
> (Savage, Bagnall et al. 2005: 207)

Other explanations for the decline in the value of occupation as a predictor of behaviour are the rise in dual career households and the proliferation of job titles which are understood by a very narrow cadre of fellow specialists.

Whatever the reason there s no doubt that neighbourhood is an effective predictor of most behaviours. For those who have an interest in local interventions it also has the clear benefit over occupation that research findings can be related to the circumstances of local areas. Indeed one of the leading applications of geodemographics in the commercial sector has been its use in systems for the evaluation of appropriate sales targets, for instance for retailers and car dealerships.

3 : Using geodemographic classification to enhance the research value to operational databases

The introduction of postcodes was designed to facilitate the processing of letters, particularly those sent out by volume mailers. Organisations generating the largest postal volumes were typically financial service organizations, catalogue mail order companies and utilities. Such organizations as these were increasingly assembling large amounts of information regarding the behaviour of their customers but could seldom source information on the demographics of other than small numbers of these customers.

With the appending of the postcode to their operational databases, the opportunity arose to add to each customer record the type of neighbourhood in which the customer lived. This made it possible to identify differences between types of neighbourhood in terms of the numbers of customers, the types of products which they bought, their levels of spend, loyalty and profitability. From this information it was then possible to target communications activities at those customers – or those non customers – who lived in types of neighbourhood associated with large numbers of profitable customers (Sleight 2004).

A characteristic of the years since 1997 has been the development of equivalent operational databases in the public sector. Examples are the Land Registry, The Driver

and Vehicle Licensing Authority, the Pupil Level Annual School Census and the Hospital Episode Statistics. Whilst these databases are collected primarily for operational reasons, they are also, to varying extents, seen as potentially valuable source of research information. For example Levy (2005) documents the use by Slough Primary Care Trust of Hospital Episode Statistics cross tabulated by Mosaic to identify and target residents in Slough with a high risk of diabetes 2. This is on account of the comprehensiveness of their coverage, the detail of their data and the frequency of their updating. All of these databases are fully postcoded allowing geographically related keys to be appended to them for analysis purposes.

4 : Overview of UK Mosaic

UK Mosaic and Acorn are the two most widely used neighbourhood classification systems in the UK. These systems classify postcodes on the basis of characteristics obtained from a number of different data sources. The decennial census is the most important of these data sources. However the use of non census sources such as the electoral register and the Postal Address File (PAF) makes it possible to classify postcodes added since the date of the previous census as well as to amend the classifications assigned to postcodes in neighbourhoods which have experienced substantial demographic change. Although both classifications operate at postcode level, not all the information used by them pertains to postcodes. For example the census statistics used in the classification process pertain to output areas which are significantly larger. Indeed Webber (2004b) discusses the benefits of deliberately using contextual statistics for areas very much larger than census output areas in order to maximize the discriminatory power of geodemographic classifications.

Information on the characteristics of the Mosaic neighbourhood types referred to in this paper can be found at http://www.businessstrategies.co.uk/Content.asp?ArticleID=566. Potential users of these systems outside the commercial sector often under-estimate the importance of visualization tools such as this for making the categories intelligible and usable to non specialist users.

Another recurring source of confusion surrounds the evidence base underpinning the content contained in this site. In order to build a classification such as UK Mosaic, some 400 different characteristics will be used. It is possible therefore to describe the behavioural characteristics of each neighbourhood type in terms of these characteristics. However the linkage between UK Mosaic and various research surveys and operational databases significantly enhances the range of behavioural attributes known about each type. Thus the use of the label 'White Van Culture' to describe a type is not necessarily based on conjecture. In this instance the validity of the label can be justified with reference to the frequency of vehicle with that colour as evidenced by an analysis of records on the DVLA database.

Nevertheless a proper understanding of the categories does require some qualitative interpretation of the factual evidence base. Such representations should be considered as

'ideal types', describing the social groups that are more strongly evident in a type of neighbourhood than elsewhere. Clearly all neighbourhood types contain a mix of demographic groups – none are any more uniform in their behaviour than is the case for categories based gender, occupation groupings or age bands. However the behaviours that are over-represented give important clues regarding the social processes and cultures that are particularly evident in these types of area.

5 : Overview of the Pupil Level Annual School Census

PLASC is the name of a database maintained by the Department for Education and Skills (DfES) which contains information relating to all children attending state schools in England. The database used in this study relates to the cohort of pupils who took various key stage tests in summer 2003.

PLASC contains a number of files which are held in relational form. Thus it is not possible to analyse the PLASC database as such. One can only analyse extracts from the PLASC database, the extracts typically being organised in the form of a rectangular database with one record per pupil.

The data held on PLASC is held in separate files. One set of files contains information relating to individual pupils in individual years. Using a pupil identifier these files can be linked together in such a way as to make possible the analysis of the relationship between a pupil's performance at one key stage test (of which there are four in total) and any previous test. DfES have developed an algorithm whereby by comparing performance scores at consecutive key state tests it is possible to derive a measure of 'value added' at pupil level, this being an indication of the improvement in the performance of the pupil in relation to others in the same age cohort during the period between the two key stages. Other important fields on the pupil level file are date of birth, ethnicity, take up of free school meals and the use of the English language at home. The date of birth field is more useful for analysis than might necessarily appear since it makes it possible to examine the level of disadvantage resulting from being born in July and August and thereby being among the youngest in one's year group.

Likewise separate files are held containing statistics held at the level of individual school. These are matched to the pupil using a school identifier. Examples of such statistics are the average GCSE points score of pupils and the proportion of pupils receiving free school meals. This file also identifies the Local Education Authority in whose area the school falls as well as codes to indicate schools by type, for example faith schools, boys' schools and girls' schools.

Statistics and other data are also held for various levels of geographic resolution. These are linked to the pupil record for any one year using the postcode. These statistics make it possible to identify the score of the pupil's home area on various indices of deprivation and the data makes it possible to identify pupils resident in various broad classifications such as ex-coalfield authorities or in rural wards and parishes. The postcode of the pupil's home makes it possible to identify instances where the pupil lives outside the

LEA of the school. Using home and school postcodes in combination makes it possible to identify the air line distance between home and school. Two geodemographic classifications, Mosaic and Acorn, are also linked to the PLASC database via the postcode.

6 : The relative power of different pupil attributes for predicting GCSE performance

The first and most obvious test that one would want to do with a 'new' PLASC data field is to examine how well it discriminates between pupils in terms of their educational performance.

On the advice of DfES officials the measure of educational performance used for this purpose is what is known as the GCSE capped points score. Pupils are awarded points according to the grades they achieve in each GCSE subject. Thus pupils can be evaluated according to the sum of their points in all subjects taken, the uncapped score, or according to the sum of points in their best 'n' subjects, the capped score. The capped score is considered a fairer measure since it reduces the score of pupils who would otherwise have achieved high scores merely by taking many subjects. Hereafter we use the terms 'GCSE score' and 'GCSE points score' to signify capped GCSE points score.

For various reasons, which are explained in section 10 below, we restricted analysis to those pupils who were not recorded as having any special educational needs (SEN).

Each eligible pupil was then considered according to nine separate criteria. Four of the nine criteria related to the pupil. These were performance at key stage 2, whether or not the pupil took free school meals, the gender of the pupil and their ethnicity. Three of the nine criteria related to the neighbourhood in which the pupil lived. These were the Mosaic type by which the pupil's home postcode was classified, the Acorn type by which the pupil's home postcode was classified and the score of the census output area in which the pupil's home postcode was located on the government's index of multiple deprivation. Two other criteria related to the pupil's school. These were the proportion of pupils with free school meals and the average geodemographic score of the school. The geodemographic score attempts to identify the extent to which the school draws its pupils from types of neighbourhood from which pupils typically perform well or poorly at GCSE and is calculated by assigning each pupil a score based on the average score of their Mosaic type at GCSE and then averaging these values across all pupils. This method is described in more detail in section 9 below.

In order to establish the level of discriminatory power of each of these criteria it was necessary to determine one or more measures of discrimination which are fair bearing in mind the number of categories into which each criterion is divided (for example the number of ethnic categories in the ethnicity field) and how many pupils fell in each category of those criteria.

Two measures were calculated. The first of these is the average GCSE points deviation weighted by the size of the category. This was calculated as follows. For each category of each criterion the average GCSE capped score is calculated for all non SEN pupils. For example for the criterion gender, average capped GCSE scores are separately calculated for boys and girls. The average score for each (gender) category is then compared in absolute terms with the average score of all pupils. By this means it is established that the average girl's score is 2.8 points different from the average score of all pupils, the same difference as is the case for the category 'boys'. Next we establish the proportion of all pupils in each category. Then we multiply the proportion of pupils in each category by the deviation of that category from the average score for all pupils. In other words we weight the variation of the category from the average score by the relative size of that category. Finally, for each of the nine criteria separately, we sum the product of the category deviation and the category size.

The second measure of discrimination that was calculated was the square of the average points deviation weighted by the size of the category. This is a more conventional method of representing deviance around the average score than method one. However it could be argued that method two tends to exaggerate the discriminatory power of criteria with many categories (such as Mosaic which has 61) as compared with criteria that have very few (such as gender which has 2). This second method is also liable to be less robust where, as for example with ethnicity, some categories, such as pupils of Albanian ethnicity, may suffer from very small sample size.

The results of this analysis are shown in table one. From this table it is evident, as one would expect, that the best predictor of a pupil's GCSE results is their performance in previous tests. This is by far the best discriminator. After this it is evident that measures relating to the pupil's neighbourhood of residence are the most useful predictors. Measures relating to the school are the next most predictive. The least predictive measures are those relating to the pupil.

Evaluation of predictiveness of various discriminators of GCSE points

	Pupil	Pupil	Pupil	Pupil	Postcode	Postcode	Output area	School	School
	KS2 level	FSM	Gender	Ethnicity	Mosaic	Acorn	Deprivation	School FSM	School Geodems
Average points deviation, weighted by size of segment	12.8	3.8	2.8	1.1	7.3	7.2	6.3	5.7	5.6
Average deviation, squared	164.1	14.8	7.6	1.2	53.2	51.2	40.2	32.1	30.9
Deviation squared, averaged	256.0	30.5	7.6	6.1	71.0	69.2	52.9	74.0	44.5

Table one : Discriminatory power of various variables as predictors of GCSE points

Within the geographic variables it is interesting to note that both geodemographic classifications, Mosaic and Acorn, discriminate significantly better than the index of

multiple deprivation. This is significant given that the index of multiple deprivation is used as a criterion in the funding formulae for Local Education Authorities. It might be of surprise to many that the geodemographics of schools is almost as effective a discriminator as the proportion of children taking free school means.

The fact that pupil level attributes are less predictive than neighbourhood or school level attributes may appear counter intuitive. There are two reasons for this pattern. One, which we will explain in more detail in section 9, is that the performance of individual pupils is influenced to a greater extent than is often realized by the characteristics of the peer group that they encounter whether at home or in school. The other is that, with the exception of gender, most of the attributes which are known about individual pupils, such as whether or not they speak English at home, are refugees, are from minority ethnic groups or take free school meals, relate to quite small population groups. Whilst members of these small groups may do much worse (or better) than average at GCSE, such discriminators are of limited value for the broad mass of pupils who are English, who are not refugees, who do not take free school meals etc.

By contrast the attributes pertaining to neighbourhoods and schools tend to be divided into classes which are of more uniform size and which discriminate high as well as low achievers. This is a particular advantage of geodemographic classifications, especially by comparison with the index of multiple deprivation. A key conclusion that one can draw from this is that measures which are recorded because they are effective for the identification of small 'at risk' groups are correspondingly less useful for differentiating the key stage performance of pupils in the upper 70% of the performance range. This distinction between the two types of criterion, for targeting 'at risk' groups and for discriminating across the entire pupil range, is seldom explicitly appreciated by people responsible for the fields incorporated in these data bases.

7 : GCSE performance and type of neighbourhood

Of the 61 Mosaic neighbourhood types, the one whose pupils achieve the most favourable GCSE results are labeled A03, 'Corporate Chieftains', with an average of 56.29 points. By contrast the one whose pupils perform least well are labeled F40, 'Families on Benefit', with an average of 24.15 points.

The Mosaic visualization tool describes these two types of neighbourhood as follows:

Corporate Chieftains contains very wealthy people, many of whom are senior business managers, living in large detached houses in outer metropolitan suburbs. These are people who have been very successful in climbing the career ladders of large commercial organisations or who have built up substantial commercial enterprises of their own. Not necessarily highly intellectual in their approach, they have relied on pragmatic commercial acumen and long hours to reach positions of seniority that now command very healthy salaries. These they use in part to finance the purchase of expensive houses in exclusive suburbs in outer metropolitan areas. These areas are

Code	Mosaic type	Pupils	Ave GCSE	Deprivation
2	A2. Cultural Leadership	3648	55.44	0.00
3	A3. Corporate Chieftains	6226	56.29	0.00
4	A4. Golden Empty Nesters	6439	55.34	0.00
5	A5. Provincial Privilege	9075	53.32	0.00
6	A6. High Technologists	17173	52.61	0.00
7	A7. Semi-Rural Seclusion	12063	51.10	0.00
9	B09. Fledgling Nurseries	4877	44.51	0.00
10	B10. Upscale New Owners	10580	50.24	0.00
11	B11. Families Making Good	16577	45.68	0.00
12	B12. Middle Rung Families	25352	43.45	0.00
14	B14. In Military Quarters	879	38.98	0.00
15	C15. Close To Retirement	20667	49.73	0.00
16	C16. Conservative Values	13560	46.66	0.00
17	C17. Small Time Business	17777	44.85	0.00
18	C18. Sprawling Subtopia	23434	44.47	0.00
19	C19. Original Suburbs	16646	49.25	0.00
21	D21. Respectable Rows	13361	41.22	0.00
51	J51. Sepia Memories	437	43.48	0.00
52	J52. Childfree Serenity	3086	46.38	0.00
53	J53. High Spending Elders	5138	50.28	0.00
54	J54. Bungalow Retirement	2774	43.03	0.00
55	J55. Small Town Seniors	12051	41.26	0.00
57	K57. Summer Playgrounds	728	44.85	0.00
58	K58. Greenbelt Guardians	9027	49.56	0.00
59	K59. Parochial Villagers	7287	43.87	0.00
60	K60. Pastoral Symphony	5335	46.96	0.00
61	K61. Upland Hill Farmers	1412	47.33	0.00
13	B13. Burdened Optimists	10884	36.79	0.01
22	D22. Affluent Blue Collar	20524	42.05	0.01
23	D23. Industrial Grit	27637	37.02	0.01
30	E30. New Urban Colonists	3850	47.42	0.01

Code	Mosaic type	Pupils	Ave GCSE	Deprivation
31	E31. Caring Professionals	3943	41.55	0.01
56	J56 Tourist Attendants	878	43.44	0.01
20	C20. Asian Enterprise	11286	43.66	0.02
32	E32. Dinky Developments	2017	38.77	0.02
45	H45. Older Right To Buy	10627	35.38	0.02
1	A1. Global Connections	556	43.22	0.03
46	H46. White Van Culture	24009	34.26	0.03
49	I49. Low Income Elderly	6096	37.28	0.04
50	I50. Cared For Pensioners	1120	30.95	0.06
8	B08. Just Moving In	1870	41.20	0.08
25	D25. Town Centre Refuge	3613	35.72	0.08
44	H44. Rustbelt Resilience	18900	30.96	0.08
47	H47. New Town Materialism	25270	28.10	0.09
99	Unclassified	1477	37.14	0.09
24	D24. Coronation Street	16230	32.07	0.10
29	E29. City Adventurers	1162	40.89	0.10
34	E34. University Challenge	485	37.88	0.12
33	E33. Town Gown Transition	1796	38.52	0.14
27	D27. Settled Minorities	11444	36.07	0.16
48	I48. Old People In Flats	537	29.14	0.17
43	G43. Ex-Industrial Legacy	14528	29.39	0.20
35	F35. Bedsit Beneficiaries	559	32.80	0.21
26	D26. South Asian Industry	12832	34.99	0.23
28	E28. Counter Cultural Mix	4766	35.13	0.29
37	F37. Upper Floor Families	8555	26.67	0.37
39	F39. Dignified Dependency	2801	27.74	0.46
42	G42. Low Horizons	23617	25.81	0.48
41	G41. Families On Benefits	13560	24.15	0.50
38	F38. Tower Block Living	580	25.87	0.61
36	F36. Metro Multiculture	12074	32.98	0.62
40	F40. Sharing A Staircase	195	29.52	0.75

Table two : Average GCSE points score by type of neighbourhood

most common in the South East of England, in particular along the North Downs and in the Chilterns, areas where in the nineteenth century land had little agricultural value and could be cheaply bought by those who wanted to live in a large house surrounded by extensive grounds. Because these houses are now so expensive, it is uncommon for younger executives to be able to afford them this after all is hardly first time or even second time buyer territory - and few people in these neighbourhoods are in their twenties, starting families. It is at about forty when people are most likely to be able to afford to buy into these exclusive neighbourhoods at a time in their life stage when children are at least at primary school and very often in their teenage years. Housing such as this is hardly suited to single people or to people on retirement incomes, and most households contain people who are married rather than co-habiting. Men, in particular, work extremely long hours and are frequently required to undertake foreign travel. Home life is interrupted by the need to address unexpected corporate issues and, as a result, family responsibilities are often unevenly divided. Wives who acclimatise to this style of living tend not to be ones who want to pursue independent professional careers or, if they do, recruit nannies and housekeepers who shoulder much of the responsibility of looking after growing children. Many of these people are keen to live at arms distance from the cosmopolitan variety of central London, to which they commute for business meetings or visit from time to time to go to a show. The ethnic minorities and significant Jewish population that have moved into these neighbourhoods are equally

likely to value their quietness and seclusion and to gain satisfaction from the prestige of living in areas of such uniformly high wealth.

And

Low Horizons contains large numbers of people in large provincial cities, who are on low incomes and are particularly dependent on city councils for housing and for transport. Low Horizons neighbourhoods are mostly found in large Northern cities, where the majority of the population remains particularly dependent on local authorities for their housing and transport. Though not necessarily areas of acute social deprivation and still having the benefit of active family and community support networks, these are nevertheless communities where horizons are low and where few people have been converted to the culture of optimistic self reliance that has characterised lower occupational groups living in small towns and southern regions of the country. In these communities those who have exercised the right to buy their homes from the council are still in a minority. The majority of the population works in semi skilled, routine jobs which demand few qualifications and offer modest wages. Though many residents are unemployed, sick or bringing up children on their own, there is not the same degree of reliance on state welfare benefits as there is on services provided by the local council. These areas consist mostly of low rise council housing, often dating from the early post war period, which originally provided adequate though not spacious accommodation for blue collar workers moving out from decaying inner city terraces. These estates are distinctive for the ambitious scale at which many of them were built, often over long periods of time, typically very distant from any local centres of employment. The tearing up of local communities that was involved in this 'decanting' of populations to supposedly more healthy peripheral estates has led to an environment whose scale and uniformity is now a critical liability since it affords few opportunities for newer land uses as well as poor access to the places where people naturally congregate and build the networks that constitute a genuine community. This uniformity contributes to low levels of contact with other social groups, owner occupiers, people who are self-employed, students, people with qualifications, and to limited opportunities for new social experimentation. In these environments older couples on better incomes are more likely to purchase a new house on a private estate than to buy their own homes and many other 'better' tenants are likely to find their way onto other smaller estates, with fewer young families. These processes contribute to the concentration in these neighbourhoods of families with children who are particularly likely to be of school age. Very few people in these neighbourhoods come from minority ethnic groups.

As one would expect the more affluent the type of neighbourhood the higher the average GCSE score of pupils, the less affluent the type of neighbourhood the lower the average GCSE score of pupils. However when we order the Mosaic types in descending order of average GCSE points, as in table two, we can see significant misalignment between the ranking based on average GCSE points and the ranking based on average level of multiple deprivation of the pupils' postcode. The use of the pupils' postcodes for this analysis, rather than the use of generalized deprivation indicators, ensures that any

variation in the proportions of pupils attending independent schools does not affect the results.

There are two principal reasons for this misalignment.

One reason for the misalignment between the index of multiple deprivation and GCSE performance (at the level of the neighbourhood type) is that the index of multiple deprivation is designed to discriminate, and does discriminate, only within deprived areas. As is evident from table 3 over half the Mosaic types contain postcodes with virtually no incidence of multiple deprivation. As a result across this half the pupil population the index fails to distinguish pupils living in types of neighbourhood of average status, where average GCSE results are obtained, and pupils living in types of neighbourhood of very high status, where exceptional results are not uncommon. As with many of the pupil level attributes, multiple deprivation is designed in such a way as to be of value only at the lower end of the status distribution.
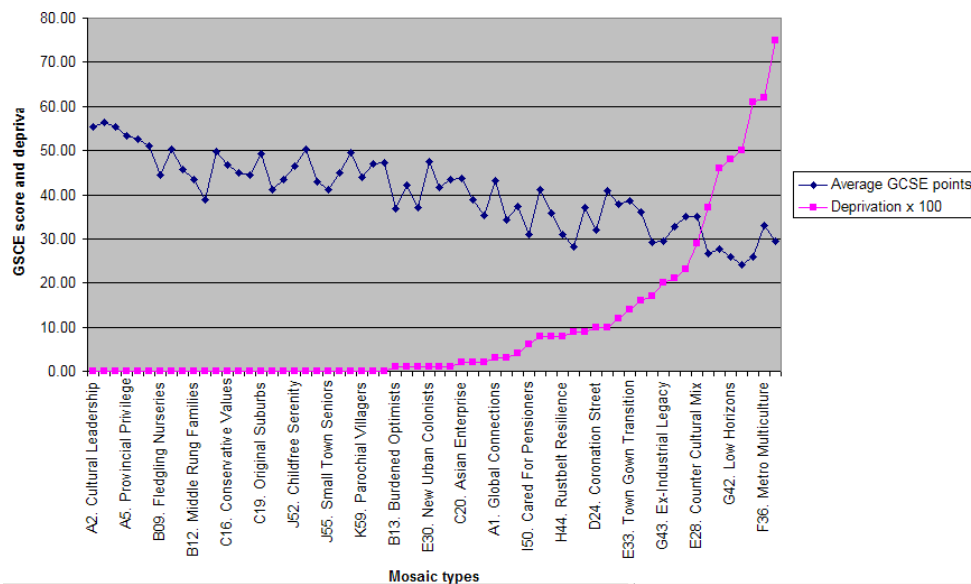

Table three : Alignment between Index of Multiple Deprivation and pupil attainment

However a more disconcerting feature of the misalignment is that in neighbourhoods characterized by inner city social housing pupils consistently do much better at GCSE that would have been anticipated on the basis of their levels of multiple deprivation. A similar pattern is evident in neighbourhoods of Asian owner occupiers, where GCSE results are much higher that would have been anticipated on the basis of multiple deprivation alone. By contrast some of the neighbourhood types with the very worse GCSE performance are characterized by predominantly white pupils living on very large overspill housing estates in England's larger provincial cities. Such neighbourhoods, though struggling academically, are not identified as being distinctive by those indicators chosen to contribute to the index.

Two of these types stand out particularly. Of them, G42, is labeled 'Low Horizons'. This type of neighbourhood is particularly common in old established provincial centres

such as Hull and Middlesbrough where many residents live in what were once quite attractive estates of local authority housing, often built at low densities in very large developments. The distinctive feature of these neighbourhoods is the very low proportion of residents who have been economically successful. These are estates with very few small business proprietors, where hardly anyone owns a corner shop, where there are no company directors or shareholders and where the majority of the population continue to rely on the corporation for transport (low car ownership) and housing (few right to buy owners). The key feature of life in 'Low Horizons' is not so much grinding poverty as an almost complete lack of engagement, whether physical or social, with successful people.

Culturally such an environment is very different from that experienced by tower block residents in mixed inner London neighbourhoods such as Camden Town and Fulham, who live in close proximity to wealthy gentrifiers whose luxury shops are located cheek by jowl with the cheap corner shops they use for purchasing daily needs.

The second type of neighbourhood which displays a misalignment between levels of deprivation and GCSE attainment is labeled H47, 'New Town Materialism'. Such neighbourhoods are particularly concentrated in new towns in the South East such as Harlow, Stevenage and Basildon. These are characterized by council estates where well paid jobs have traditionally been available to people without qualifications. These are neighbourhoods where material expectations tend to be high, where a high proportion of parents form serial household relationships, where levels of bad debt are especially high and where 'The Sun' achieves some of its highest readership levels.

Here, it might be hypothesized, pupils come from communities which for various reasons have not felt it necessary to plan for the future, where lack of educational qualifications has not traditionally been seen as an obstacle to earning good money and where flexibility and opportunism are often perceived to attract greater rewards than diligent consistency of direction. Yet on the basis of conventional indicators of deprivation, these are not particularly disadvantaged neighbourhoods.

By contrast pupils in Mosaic neighbourhood types with high proportions of ethnic minorities, such as F36, 'Metro Multiculture', and D26, 'South Asian Industry', consistently perform very much better at GCSE than would be expected on the basis of multiple deprivation statistics.

The implication of this analysis of the relationship between types of neighbourhood and average GCSE scores is that low educational attainment tends to occur in many different contexts and for quite different reasons, of which low incomes, poor housing conditions and lack of fluency in the English language are just three. The index of multiple deprivation certainly captures some of these contexts, but by no means all of them. In particular it captures measurable and physical manifestations of disadvantage more effectively than cultural ones.

8 : Longitudinal differences in pupil attainment by type of neighbourhood

The distinctive attitude of the South Asian community towards education is particularly evident when one examines the relative ranking of the 61 Mosaic types at key stage 2 and at GCSE. Table four shows the Mosaic neighbourhood types in which pupils'

Mosaic types : Improvement and Decline

Mosaic type	Current year Ks2 rank	Current year GCSE rank	Improvement / Decline
C20. Asian Enterprise	37	23	14
D26. South Asian Industry	55	46	9
K59. Parochial Villagers	30	22	8
F40. Sharing A Staircase	58	53	5
K57. Summer Playgrounds	23	18	5
E28. Counter Cultural Mix	39	45	-6
E31. Caring Professionals	24	30	-6
I48. Old People In Flats	49	55	-6
E29. City Adventurers	26	34	-8
A1. Global Connections	7	27	-20

Table four : Neighbourhood types where pupils relative score improves / deteriorates most

performance tends to improve or deteriorate most in relative terms between key stage 2 and GCSE. Column 2 and 3 show the rank order of selected Mosaic types in 2003 for both key stage 2 and GCSE. These statistics relate to two different cohorts in the same year.

What is evident is that pupils resident in the type C20, 'Asian Enterprise', achieve the greatest improvement in their results between key stage 2, where they are ranked 37 / 61, and GCSE, where they are ranked 23 / 61.   The second best improvement occurs in type D26, 'South Asian Industry'. Of the three other types that improve their position most, two are rural neighbourhood types.

By contrast the types of neighbourhood where performance deteriorates most, in relative terms, are particularly concentrated in gentrified neighbourhoods in inner London. Here one can only hypothesise that between key stage 2 and GCSE a very large proportion of

the higher performers are lost from the system. Either they move from the state to the private sector or migrate with their parents to homes and schools in more suburban environments.

The fact that the Mosaic neighbourhood types at each end of this continuum share broadly similar demographics suggest that these observed differences are not the results of random error but evidence of systematic temporal changes which have a significant impact on methods of school evaluation. For example if one were to use 'value added' as a criterion for evaluating school performance, then one would be likely to find a large cluster of supposedly 'high performing' schools in South Asian neighbourhoods. Achieving high value added is relatively easy if these are the types of neighbourhood from which your school draws the majority of its pupils.

9 : Estimating peer group effects in different school environments

So far we have investigated the extent to which the location of a pupil's home makes a difference to their educational attainment at the GCSE.

In the following section of the paper we pose a slightly different question ; 'Do pupils gain incremental benefits from attending schools that are predominantly middle class in character?' and answer the question by means of the concept of school geodemographics, one of the nine criteria which we included in the set used for comparing discriminatory effectiveness.

In the geodemographic literature frequent use is made of the term 'geodemographic profile' (McCorkell, 1997). A geodemographic profile indicates the form in which the distribution of a population by type of neighbourhood (such as Mosaic) differs from the distribution of a base population. Such profiles can be used to describe geographic areas, whether local authority districts, parliamentary constituencies, retail spheres of influence or school catchment areas. A geodemographic profile by Mosaic for example would contain 61 values, one for each Mosaic type, describing the proportion of the population of a defined area in each type.

Profiles can equally well be used to describe the owners of a make of car, readers of a particular newspaper, victims of a particular type of crime. They can be used to describe pupils by average score at GCSE or who are admitted to Oxford University.

One useful feature of geodemographic profiles is that they can be 'matched'. Thus if in vector 'a' I have the profile of the readers of 'The Financial Times' and in vector 'b' the profile of Mercedes owners, by 'matching' these profiles I can identify the extent to which readers of 'The Financial Times' are more or less likely than the population as a whole to be Mercedes owners. The calculation is quite similar. Multiply the proportion of Financial Times readers in each Mosaic by the average propensity of adults in that type to own a Mercedes and sum the product of the two vectors.

A similar method can be used to assess what would be a likely or expected average GCSE points score for any secondary school. The necessary inputs to this profile

matching exercise are two vectors, one the average GCSE points score of each Mosaic type (nationally), the second the percentage of pupils in any given school residing in each of the 61 Mosaic types. If this profile matching technique is applied to all secondary schools on the PLASC database it is then possible to rank order the schools according to the extent to which they draw pupils from types of neighbourhood where pupils typically do well at GCSE.

When schools are scored and ranked in this way it becomes possible to examine whether pupils from predominantly middle class Mosaic neighbourhood types perform equally well irrespective of the social composition of the school they attend or whether they achieve higher GCSE scores if they attend schools dominated by pupils from middle class neighbourhood types.

Average GCSE points : non SEN pupils by geodemographics of postcode and of school

		Geodemographics of the school					
		Highest	High	Average	Low	Lowest	Mean
Geodemographics of home postcode	Highest	57.2	53.8	52.3	51.7	47.8	55.6
	High	53.4	49.9	47.9	45.4	44.1	49.8
	Average	50.0	46.9	44.9	42.7	41.5	45.3
	Low	45.3	41.5	39.9	37.7	35.7	38.6
	Lowest	41.3	37.1	35.0	32.3	29.8	32.7
	Mean	53.0	47.4	43.9	39.5	35.2	44.3

Table five : Influence of neighbourhood type and of school geodemographics on pupils' GCSE points

Evidence of differences of this sort can be clearly seen from the results of table five. The values in the matrix represent the average GCSE scores of pupils according to the geodemographics of their home postcodes (rows) and of the schools they attend (columns). To allocate pupils to the five rows we have rank ordered the Mosaic types into five bands according to average GCSE score. Pupils in the Mosaic types with the highest average GCSE scores are assigned to the top row ('highest') whilst those returning each night to homes in inauspicious Mosaic types are in the row 'lowest'.

In a similar manner the schools covered by the PLASC database are ranked to produce five class bands with equal numbers of GCSE pupils. The left hand column ('highest') contains those 20% of schools whose pupils tend to be drawn from types of neighbourhood where pupils typically do well at GCSE. The 'lowest' column contains schools that serve pupils from types of neighbourhood where fewest perform well at GCSE.

It is interesting that whilst the range of scores for the five classes based on home location are greater (55.6 to 32.7) than the range of scores for the five classed based on school geodemographics (53.0 to 35.2), the two ranges are of not hugely dissimilar magnitude.

Thus children from poor neighbourhoods are often doubly disadvantaged. First they live in neighbourhoods where it is not expected they will do well. Then they attend schools where they are surrounded by other pupils with below average expectations. Likewise those middle class children who attend predominantly middle class schools enjoy the double benefit of home advantage reinforced by a school peer group with high aspirations.

These two extreme positions are common ones as are other cells on the diagonal of table five. What is less common, though perhaps more illuminating, is the experience of pupils from poor neighbourhoods who, for some reason or other, find themselves in among a school peer group from predominantly better off homes. These pupils perform less well at GCSE than their better off school peers but much better than pupils from similar backgrounds to their own attending schools attended by pupils from poor neighbourhoods.

There are various possible reasons for this pattern. It could be argued that the parents living in well off neighbourhood types who send their children to schools in less well off neighbourhoods may be less concerned about their children's educational outcomes than those who send them to 'better' schools. It is possible that the two groups, even though resident in the same postcode types, are not necessarily similar in terms of status. Though these considerations may be valid at the margin, it is difficult to believe that they are sufficient on their own to result in such widely different outcomes and it would be surprising if a major reason for the different is not the significant normative influence that peers exercise within the school environment.

These findings also suggests that it is a very rational practice for middle class parents not just to move into middle class neighbourhoods if they can afford to but to move into suburbs with large concentrations rather than lonely pockets of such neighbourhoods. In this way they can be assured that in any local school their children may be admitted to they will be surrounded by the benign influence of other pupils from relatively privileged backgrounds. However well or badly those children are taught, they have a much higher probability of performing well than if they are exposed to the pressure of a school containing pupils from a socially representative mix of neighbourhoods.

Table six supports the rationality of such decisions by revealing the extent to which inequalities are amplified over time notwithstanding the efforts of the educational system to compensate for spatial inequalities. In this table we examine the performance of pupils in selected Mosaic types at GCSE according to how well they performed in English at key stage 2. At key stage 2 the majority of pupils are awarded one of five grades which attract values of '0', the lowest performance, 15, 21, 27 and, the highest, 33. If we examine the pupils who achieved the top grade in English, 33, we find that this group on average achieved a score of 61.2 at GCSE. This average score conceals a very wide variation. Pupils who score 33 in English were likely to perform much better at GCSE if they lived in the Mosaic types A3, 'Corporate Chieftains', or A2, 'Cultural Leadership' (over 67 points on average) than if they live in G41, 'Families on Benefit',

Average GCSE points by KS2 score (English) : selected Mosaic types

	Score of non SEN pupils KS2 (English)					
	0	15	21	27	33	Mean
A3. Corporate Chieftains	49.0	58.3	40.3	54.8	67.2	58.4
A2. Cultural Leadership	42.3	51.7	38.6	55.2	67.7	58.3
A4. Golden Empty Nesters	49.9	55.7	38.3	54.4	66.6	57.4
A5. Provincial Privilege	44.5	51.3	37.7	52.9	66.0	55.6
A6. High Technologists	46.9	52.5	38.2	52.7	65.3	54.8
A7. Semi-Rural Seclusion	45.6	50.5	35.2	51.6	64.9	53.5
J53. High Spending Elders	44.9	48.2	35.9	51.5	64.9	53.0
K58. Greenbelt Guardians	42.3	52.4	35.8	51.6	64.6	52.6
B10. Upscale New Owners	43.9	50.5	36.7	51.2	64.1	52.2
C19. Original Suburbs	39.7	46.5	35.7	50.6	63.6	52.2
H44. Rustbelt Resilience	25.0	30.7	25.5	39.8	54.2	35.7
F40. Sharing A Staircase	22.3	27.4	23.1	40.5	54.3	34.7
G43. Ex-Industrial Legacy	23.7	28.3	24.2	38.3	51.9	34.1
I48. Old People In Flats	22.1	18.0	25.1	39.3	50.0	34.0
H47. New Town Materialism	22.9	29.7	24.4	38.1	52.4	33.7
F39. Dignified Dependency	22.8	27.2	23.4	37.4	52.7	33.2
F37. Upper Floor Families	20.4	26.5	22.7	37.0	50.7	32.0
G42. Low Horizons	20.4	26.2	22.0	36.2	51.1	30.9
F38. Tower Block Living	16.2	24.2	21.0	39.2	50.0	30.8
G41. Families On Benefits	20.4	25.1	21.9	34.9	50.5	29.6
Mean	31.1	37.5	29.4	46.0	61.2	44.3

Table six : Performance trajectories over time : longitudinal analysis by Mosaic type

F38, 'Tower Block Living', or G42, 'Low Horizons'. Conversely if a pupil from a middle class neighbourhood performed poorly at key stage 2 (scoring 0 or 15), he or she had a much better chance of achieving at least an average rating by the time GCSE was taken than would be case for pupils resident in disadvantaged neighbourhood types. This tendency further undermines the appropriateness of using 'value added' as a measure of school performance. It is evident that pupils from middle class neighbourhoods achieve consistently higher 'value added' than those for less advantaged backgrounds

Table seven shows very similar patterns based on the geodemographics of the school.

Average GCSE points score by KS2 points and Geodemographics of school

	Score of non SEN pupils (KS2 English)						
	0	15	21	27	33	39	Mean
Geodems of school							
Lowest	20.9	24.0	22.9	36.6	50.3	71.0	31.6
Lowest	28.0	31.7	27.7	42.0	55.0	61.0	38.6
Average	32.7	37.4	30.6	45.2	58.4	75.2	43.4
High	37.8	43.3	33.7	48.5	61.6	78.1	48.1
Highest	48.4	55.9	39.5	55.0	67.2	78.3	57.2
Mean	31.1	37.4	29.4	46.0	61.2	77.2	44.3

Count of pupils by KS2 points and Geodemographics of school

	Score of non SEN pupils (KS2 English)						
	0	15	21	27	33	39	Total
Geodems of school							
Lowest	3,245	5,763	28,300	38,040	7,146	2	82,496
Lowest	2,696	3,934	26,970	47,256	11,470	1	92,327
Average	2,392	3,530	24,002	54,797	17,089	6	101,816
High	1,931	3,559	20,315	58,869	22,547	14	107,235
Highest	1,418	4,252	11,021	49,042	31,701	26	97,460
Total	11,682	21,038	110,608	248,004	89,953	49	481,334

Table seven : How school geodemographics correlate with value added

10 : Using school geodemographic profile as a basis for evaluating school performance

The analysis of variations in pupil attainment by type of neighbourhood provides overwhelming evidence of the extent to which variations in GCSE scores are associated with the type of residential neighbourhood in which a child lives. The association between performance and type of neighbourhood is equally strong at the pupil level as it is at the school level.

It is therefore unavoidable that a ranking of schools based on the average unadjusted GCSE scores of their pupils will correlate very strongly with a ranking of schools based on the geodemographics of their intake. Indeed when the two measures are correlated we find a coefficient of correlation of +0.71. In other words almost exactly half of the variation in the average GCSE scores at school level is 'explained' by the differences in the geodemographic profile of their pupils. The other half the variation is account for by the performance of the local education authority, the type of school (faith, boys, girls etc) and by the quality of the management and teaching within the school.

To the extent that league tables do little more than reflect the social composition of the school they are of little or no value as measurements of the quality of the management and teaching at the school, even though they may be valuable to parents as an indicator of which school their children are most likely to score well at if they can be admitted.

It is for this reason that DfES have used PLASC to calculate 'value added' as well as 'raw' scores for each school. The argument for such analysis is that it identifies schools which are effective or otherwise in improving the relative position of their pupils over the duration between key stage tests.

The evidence of this paper, together with that of Webber (2005), suggests however that just as the variation in 'raw' or 'unadjusted' scores is explained to a large degree by difference in the geodemographic profiles of the school, this is equally the case with 'value added'. Schools dominated by pupils from middle class neighbourhoods or from South Asian communities are likely to score very much better on average 'value added' metrics than schools drawing pupils from disadvantaged neighbourhoods.

We therefore propose that a fairer, more robust and more appropriate measure of a school's relative performance is achieved by comparing its actual average GCSE points score with the estimates level which would have been expected based on its geodemographic profile, as described in section 9. It is in order to ensure the fairness of this calculation that we have excluded SEN pupils both from the calculation of school geodemographic profiles and from the calculation of average GCSE points by Mosaic type. Otherwise the alignment between our estimates of target performance and actual would be distorted by the different extent to which school admitted pupils with special educational needs.

An effective evaluation system would therefore consolidate three statistics for each school, the first the actual 'raw' or 'unadjusted' average GCSE score, the second the 'target' or 'benchmark' average GCSE score based on the geodemographic profile of the school, the third the 'residual' or 'performance' score, this being the numeric difference between the raw/unadjusted and target/benchmark scores.

Figure one illustrates the application of this approach to schools in the Bristol area. In this figure the darker the shading the higher the target/benchmark score of the region's secondary schools. In other words this is a map of how well local secondary schools ought to be able to do. Figure two by contrast shows the distribution of residual/performance scores for primary schools in the Plymouth region based on the same methodology. Schools with darker shading are here performing better than might be expected on the basis of their geodemographic profile, schools with lighter shading performing less well than might have been expected.
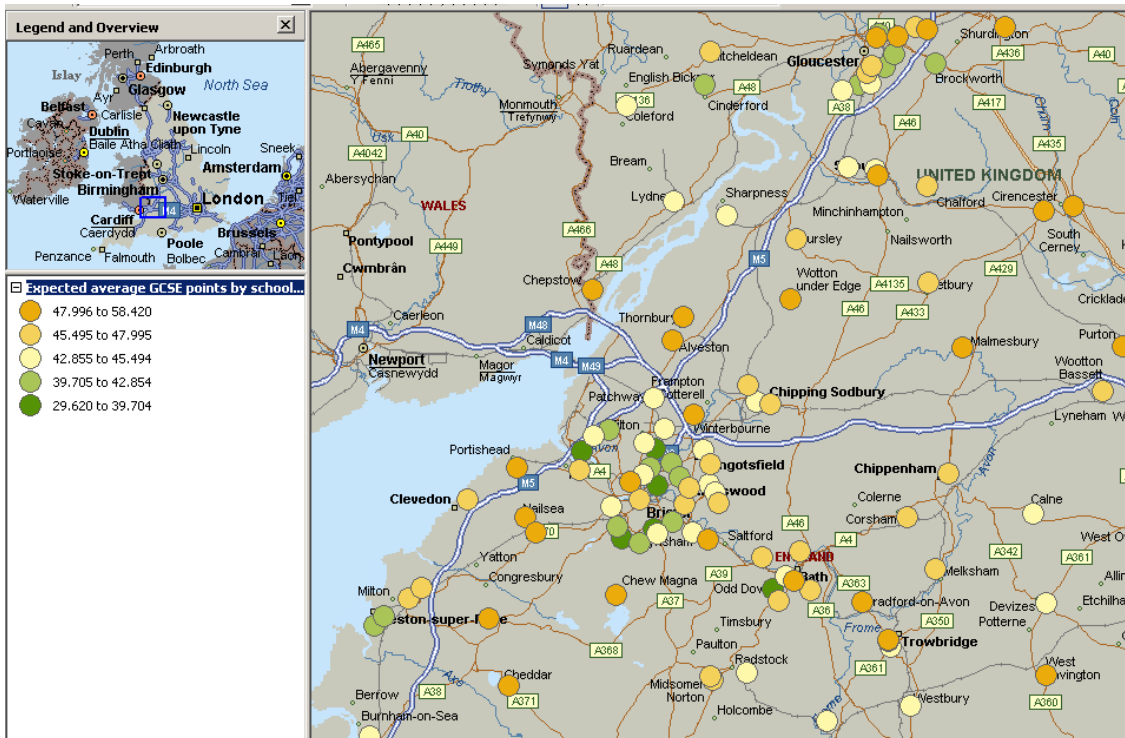
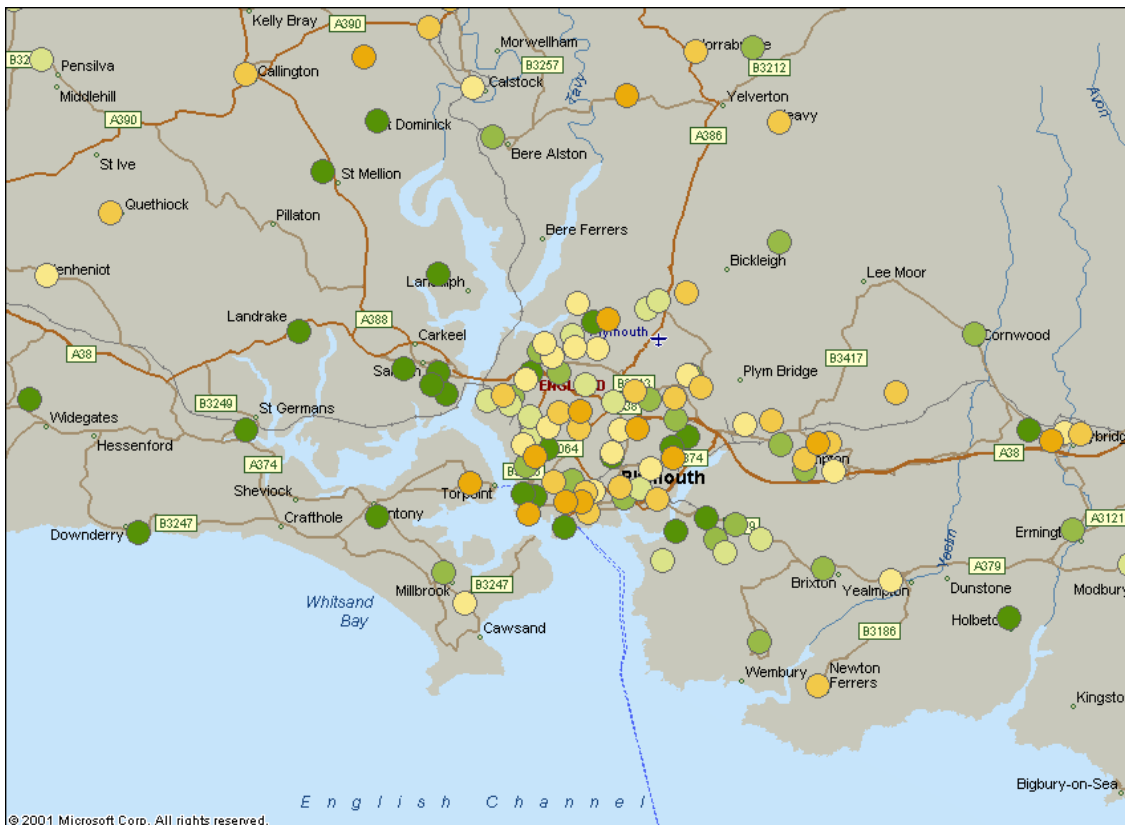Figure one : 'Expected' performance, of secondary schools around Bristol (GCSE points capped)

Figure two : 'Performance' of primary schools around Plymouth – KS2 English

One of the benefits of this approach to evaluation is that the methodology can be applied at any level of geography. For example in table eight we show the local education authorities in which average pupils performance at GCSE compares most favourably with what might be expected on the basis of their geodemographic profile and the local education authorities in which average pupil performance is worst. Table 7 : How school geodemographics correlate with value added

Average GCSE points score : Actual, expected and performance of selected Local Education							
LEA	Actual	Target	Performance	LEA	Actual	Target	Performance
Kingston upon Hull	29.97	33.71	-3.78	Torbay	40.09	38.09	1.96
Hillingdon	36.75	39.83	-3.12	Slough	40.78	38.75	1.99
Bristol, City of	33.87	36.91	-3.08	Gloucestershire	42.21	39.91	2.26
Greenwich	33.76	36.73	-3.01	York	40.96	38.65	2.27
Bracknell Forest	38.06	40.76	-2.74	Kingston upon Thames	45.06	42.63	2.39
Blackpool	34.30	36.80	-2.54	Redbridge	42.73	40.27	2.42
Lewisham	34.53	36.91	-2.42	Trafford	41.80	39.29	2.47
Islington	33.26	35.62	-2.40	Isles of Scilly	44.00	41.43	2.53
Luton	34.51	36.87	-2.40	Camden	39.77	36.91	2.82
Doncaster	33.56	35.81	-2.29	Sutton	44.17	41.04	3.09
Merton	37.32	39.52	-2.24	Gateshead	38.89	35.46	3.39
Nottingham	31.75	33.82	-2.11	Kensington and Chelsea	41.71	37.77	3.90

Table eight : 'Performance' against benchmark : selected Local Education Authorities

11 : Relevance of the results to discussion on the sociology of education

Policy makers, those that study educational outcomes and, not least, parents have long accepted that there is a direct relationship between schools and educational attainment and have directed their energies accordingly. Class, gender and ethnicity matter, so also we argue in this paper, does geography and particularly geo-demography. Overall it can be claimed that the middle classes do better than the working classes and that girls do better than boys. When it comes to ethnicity, the hierarchy of performance is complex mediated not only by class and gender but also, and in different directions, by the ethnic composition of the school. The limited research undertaken on ethnicity shows that Chinese and Indian boys do best, that African Caribbean boys do worst and that whites are split across the league tables by differences in class and gender. Indians do particularly well in schools in which they are the dominant ethnic group, but this is not the case for the other non white ethnic groupings (Johnston, Wilson et al. 2005).

The sociology of education shows that there have been clear class practices in terms of extracting maximum benefit from the education system – see for example the run of literature from Jackson and Marsden's (1962) study of how the Yorkshire working class lost out to Devine's (Devine 2004) study of how the professional middle classes in Manchester and Boston have ensured that they didn't. Although the means of organizing education has undergone dramatic change in the forty years or more that separated these two studies, what has not changed significantly is the way that these two class groups have experienced the education system.

The middle classes have actively strategised a future for their children envisioning them in yet to be achieved positions, whereas the working classes have, for the most part, accommodated within existing social and geographical boundaries (Ball, Bowe et al. 1995)[1]. This widely accepted binary division reflects the power of social class in contemporary society in which the middle class regard the educational system as one to be negotiated and if necessary challenged whereas the working class accept its abuse of opportunity with varying degrees of cynicism and resentment and as an introduction to a life to come (Willis 1977). It would appear that little has changed fundamentally over the last forty years[2]. At the same time, the fear of failure as Power and her colleagues (Power, Edwards et al. 2003) have shown, is at the heart of being, becoming and remaining middle class – see also Barbara Ehrenreich's work on the middle class fear of failure (Ehrenreich 1989). 'Wanting the best' for one's child possibly means denying it for somebody else's - the 'jockeying for position' by which Bourdieu has characterised the middle class strategising around educational resources.[3]

Until the 1990s, what constituted a 'good school' remained implicit and often ill-defined, relying more on insider knowledge and shared experiences of its reputation in which social exclusivity and educational judgments often became hopelessly entwined. This 'ethos' became the basis for a 'good school's' social exclusivity which those without the requisite social knowledge were unable to comprehend and from which they therefore found themselves excluded – 'if you had to ask then you didn't understand'. For their

part, successful schools met the defining characteristic of middle class aspiration by ensuring that its children found their way into the right part of the university system. This implicit, yet remarkably pragmatic, approach survived the initial transition from a selective system (set up as one leg of the tripartite education system founded by the 1944 Education Act) to the non selective comprehensive system that was introduced from the 1970s onwards. In effect, an informal market in educational choice developed in which knowledge was largely monopolised by the middle classes for the advantage of their children. The knowledge base, but not the market itself, has however been changing since the passing of the 1988 Education Act[4].

This was of course only one aspect of the changes that the Thatcher government made to the welfare state during its time in office in which it moved towards a social market economy. None of these reforms were entirely successful from the government's point of view but one effect was to require that what had previously been implicit became increasingly explicit – costs, waiting lists, performance. In education, this simply formalised the 'parental choice' model which the middle classes had always practiced although, in reality, it remained as constrained by the geography of social class as it always had been. What did however change was the 'informational base' on which parents and others could inform themselves: markets, if they are to work, require that actors have access to information – the major constraint has usually been that of 'imperfect' information. In the early years of the transition to a comprehensive system, information about a school's progress was passed on by those 'in the know' to those who wanted to be in the know through informal and largely class based networks. Logically however, the Conservative government's 'empowerment agenda' required that this information should become publicly available so that all people, irrespective of their access to informal knowledge, would experience a 'level playing field'.

The world wide web provides government with an effective communications medium for disseminating performance indicators to potential consumers of the services of competing delivery units. However in order to create this information, considerable investment has had to made in the setting up of central registers of records relating for instance to pupil performance, such as PLASC, or to performance, such as the Hospital Episode Statistics (HES), resulting in the calculation of 'league tables' published on the internet. Interestingly in sectors which are not subject to marketisation, such as policing, no such databases have been established.

This resulted in a series of reforms which were as much about improving the quality of the teaching force as providing information to consumers of education. To this effect, tests were introduced at year 1, year 6 and year 9 – approximating to age 7, 11 and 14 – in addition to the public examinations taken at year 11 (GCSE), 12 (AS levels), 13 (A level). The first cohort of students raised on this diet graduated from the schooling system in 2004 which enables us to begin to paint a quantitative picture of school performance from publicly available data published annually about individual schools. At the same time and in parallel, a regime of inspection was set up by the Office for Standards in Education (OFSTED) which has led to the publication every few years of (publicly) available reports on individual schools which has provided a narrative context for the

output of quantitative results. Over time, rates of improvement or deterioration, have become increasingly subject to public appraisal linked to a policy regime in which the 'best' schools are rewarded with increased funding and financial independence whilst the 'worst' are deemed to be failing becoming subject to an increasingly punitive set of 'special measures' including - ultimately - that of closure.

Most recently, indices to quantify 'added value' have been devised which attempt to quantify how well schools do in the context of the relative educational and social (dis)advantage of their intake. Perhaps not surprisingly, given the history of 'plus ca change, plus c'est le meme chose' in educational policy, the general finding is that schools drawing pupils from middle class backgrounds typically perform significantly better on this measure too. Our study gives unambiguous confirmation of this.
This emerging flood of data has tended to reinforce what policy makers, sociologists and dinner table participants have always known: that individual strategies to do the best for one's child can have serious implications for the ability of the educational system to provide good schooling for all. Until recently however, this has been subject to the criticism of the ecological fallacy – in other words, that individual behaviour is being imputed from social trends. To date, much of the evidence – compelling though it has been – has either come from aggregate cross-sectional data about the performance of social collectivities or from qualitative usually ethnographic work or from cohort or panel studies.

All have been extremely valuable and persuasive in terms of painting the continuing 'big picture' of the perpetuation of educational (dis)advantage. What they have been less able to do is to look at the complex interaction of home and school from both ends of the relationship at the same time in terms of class, gender, ethnicity and geography. In order to understand the nature of continuing educational disadvantage we need to plot these changes for individual children and to see to what extent individual schools do better if they have a high proportion of socially advantaged children and to what extent such children do well because they go to high performing schools. We also need to know what happens to children from the same broad neighbourhood who do less well because they go to poorly performing schools. The analysis needs to be such that it is able to plot these changes both at the level of the individual school and for individual children that make up that school. This requires access to a very large, complex and spatially organized database.

The Annual School Census (ASC) also known as form 7 provides sufficient information for much of this work to be undertaken and has been particularly useful in relation to understanding the complexities of ethnicity in the experience of education (Johnston, Wilson et al. 2005: 55). These authors show, for example, that in London approximately 20% of all white pupils are educated in multi-ethnic schools (i.e. schools in which white pupils are not a majority) whereas outside London this proportion is much lower. Outside London, Asian children in metropolitan authorities tend to be concentrated in predominantly non-white schools. These findings have been extremely useful in terms of examining the complex patterns of ethnic segregation and suggest that it is only in London that white pupils are exposed in any numbers to what might be termed a multi

ethnic educational experience. Burgess and Wilson (Burgess and Wilson 2005) undertake a similar analysis but focusing specifically on the issue of residential and income segregation and show that

> … levels of ethnic segregation in England's schools are high. There is however a significant degree of variation both across LEA's and across ethnic groups: segregation is higher for pupils of Indian, Pakistani or Bangladeshi origin than for pupils with Black Caribbean or African heritage. Segregation for the former groups is positively related to their proportion in the local population, while the same is not true for the Black aggregate group … we identify particularly high segregation, particularly for pupils of South Asian origin… finally we show that ethnic segregation is only weakly related to income segregation. (Burgess and Wilson 2005: 33-4)

In both these reports, which come from the same team, the authors don't make any claims about the effects of this on educational attainment largely because that information was not incorporated into the database used for the study. This omission has been rectified by the opportunities that now exist to access to PLASC which allows such research to examine how these patterns relate to those of educational attainment. However there are two important caveats to be made about the approach taken by Johnston and his co authors; firstly, that they tend to assume that there is a close link between residential and school segregation and secondly that the PLASC data do not allow researchers to make any fine grained distinctions concerning social background. The only indicator in the data is whether the pupil is eligible for free school meals. In the absence of other information free school meals is frequently used as an indicator of deprivation but does not enable us to discriminate between what might be seen as distinctions between and within the working and middle classes. This is partly because it applies only to children whose parents' incomes are particularly low but also because the take up of this benefit among those who are eligible varies significantly between schools, take up of he benefit being to some extent a function of the characteristics of the school as much as of the parents.

We have overcome these shortfalls in the PLASC data in by working with pupil records coded according to the geodemographic classification of their home postcode. This enables us to undertake our analysis of individual and school performance in relation to the likely household background in broad socio-demographic terms. We have been able therefore to use a proxy for social class, which is arguably more sympathetic to contemporary conceptions of social difference than standard measures of social class, to examine their effects on educational attainment. Crucially though, we are examined how these work out in terms of the attainment of particular schools in relation to the social mix of their pupils.

12 : Relevance of the results to the debate on consumer choice in public services

In a post industrial consumer society, choice is often considered to be a beneficial end in its own right as well as to be means to achieving more efficient allocation of resources. Liberal economic thought posits that the ability of the consumer to choose between competing options ensures that resources are productively allocated to deliver sought

after benefits and in such a way as to improve working practices. In an ideal world inefficient producers concede market share to more efficient ones and profits shift to the advantage of suppliers who most effectively implement changes in product features or technologies which best meet the changing desires of well informed consumers.

So widespread has been the acceptance of these assumptions that UK governments, frequently on the advice of consultancies originally set up to advise on business management, have viewed competition and choice as mechanisms whereby the performance of public service delivery units can also be improved. Such assumptions initially underlay the privatisation of state monopolies but have more recently formed the justification for increasing marketisation of sectors such as health, university education or schools, whether through the introduction of internal or external financial exchange mechanisms.

Viewing 'clients' as customers, and offering them the information on the basis of which they could make more informed choices between competitive providers within the state sector, was seen as a complementary and, on occasions, a more effective method of applying operational disciplines than the imposition of standards and targets. However, in order for such 'shadow' markets to operate efficiently, it is recognised that there is a requirement for 'customers' to have access to information on the basis of which informed choices can be made. Thus the publication of targets and of the extent to which different delivery units have achieved these targets has come to be viewed as a key mechanism whereby 'customers' can be encouraged to abandon poor performing units in favour of those which offer a better quality of service, and hence, assuming resources follow, for shifting resources to the most 'efficient' service delivery providers.

13 : Relevance of the results to the wider debate on performance indicators

As the use of performance indicators becomes more widespread, it becomes evident that variation in the measured output of delivery units is not wholly independent of the circumstances of the customers to whom they deliver the service.

At its most basic and obvious, it is self evident that a general practitioner serving an elderly population in a declining former coal mining region will require considerably greater resources to provide an equivalent level of health care per thousand clients than one in Milton Keynes – this is known as the 'inverse care law' (Tudor Hart 1971). Likewise PLASC data shows the performance of a secondary school, as measured in terms of average GCSE points per pupil, is likely to be much lower in a deprived inner city area than in an affluent commuter suburb. Such variations are equally apparent when comparing universities in terms of the proportions of graduates achieving graduate level employment within six months of leaving or indeed when comparing the performance of hospital consultants in treating different diagnosis. Measures of performance sufficiently robust to inform potential customers need ideally to be adjusted to take into account variations in the circumstances of the population to whom the service is delivered. Likewise raw unadjusted metrics result in delivery unit managers exercising their own choices regarding which customers they will admit since, by restricting access to those

with highest chance of a positive outcome, they are likely to improve their organisation's position on those metrics used to judge their own performance.

It is such thinking that has led to investments in the development of more sophisticated 'customer' level databases whereby one can measure and then compare schools on constructs such as 'educational value added', a construct which measures the extent to which children have improved their performance from one key stage to another.

A key feature which distinguishes schools from hospitals is that schooling is a 'social' experience. The likelihood of a person admitted to hospital being successfully treated will clearly depend upon the efficiency with which the hospital is managed and on the professional competence of the surgeons that it employs. The risk will also depend upon the circumstances of the patient, their age and level of disposable income. However, by and large, we don't expect persons admitted to hospital serving a deprived population to experience worse health outcomes than people of identical age and levels of disposable income admitted to hospitals serving affluent populations. The interactions between patients who are admitted are very limited in their nature and are unlikely to be ones which would have a material affect on health outcomes.

The situation in a school, and perhaps also in a university, is significantly different. Whilst the effectiveness of the school management and of the quality of the teaching remain critical factors in contributing to the educational outcomes of individual pupils, and whilst the social background of the pupils are also very important, it would be surprising if some of the variation in pupil performance were not dependent on what might be described as 'peer effects'. One would expect these 'peer effects' to operate both outside and inside the class room. Outside the classroom peer effects will influence the level of status that is accorded to high educational achievement and the general attitude to learning. Inside the classroom differences in the social mix within the school will be reflected in the level of disruption, in expectations, in the level of intellectual challenge from other pupils, the pace of the tuition and amount of time available to the teacher to spend with individual pupils. These issues were explored in relation to the classroom by Basil Bernstein (Bernstein 1975) and his references to restricted and extended codes in the interactions between pupils and teachers and in some rather different ways by Michael F D Young in his work on the hidden curriculum. Both approaches demonstrated how middle class children were favoured in the classroom situation (Young 1971).

If such peer group effects are significant, then one would expect that two pupils, identical to each other in terms of age, gender, ethnicity and income and attending schools where the quality of the management and of the teaching were of equal standard, would not necessarily have the same probability of achieving target key stage results. The pupils attending schools drawing their children from population groups which typically perform well in key stage tests would, it might be expected, perform significantly better than pupils from otherwise identical backgrounds who attended schools drawing children from poorer performing population groups. The evidence of our analysis supports the validity of these assumptions.

14 : Relevance of the results to the use of performance indicators and parental choice in education

The relevance of peer group effects in education, if they exist, has significant implications for the debate about choice.

If there were no link between educational performance and the home background of the pupil, then any variation in the educational performance of different schools would be a direct consequence of variations in the quality of management and teaching and so it would be rational for parents to develop strategies for their children to be admitted to high performing schools. If, on the other hand, variations in school performance could be explained entirely in terms of the social composition of their intake, then the benefits, in terms of educational attainment, of choosing a high performing school would be marginal at best. However if it were the case both that the performance of schools could be wholly explained in statistical terms by the social composition of their intake but that pupils from less advantaged backgrounds performed better in schools whose intake consists mostly of advantaged children than they do in schools whose intake consists mostly of disadvantaged children, then it would indeed be rational for parents, whatever their circumstances, to try to gain admission for their children to 'better' schools. The prime motivation, in this case, would not be to get their children into schools which were better managed or which had better teachers, but ones which had 'better' children, in other words whose intake was drawn from social groups whose children typically did well at school and whose motivation was likely to engender a positive peer group effect.

Conversely, even if the quality of school management and teaching were raised to a uniform standard across every school, it would not be in the interests of parents from better off backgrounds to choose for their children schools which take their pupils predominantly from poorer backgrounds.

All of this may be intuitively obvious to the large numbers of parents who care to exercise choice about where their children go to school. Nevertheless, however obvious this may appear to parents, it has not previously been obvious to educationalists how such effects could be measured using the PLASC or other statistical data sets. And whilst it is relatively easy to access information on the measured performance of schools, or indeed information on the overall level of small target groups such as children living in disadvantaged neighbourhoods, with free school meals or with special educational needs, it has not previously been possible (as far as the authors are aware) to obtain information on the extent to which individual schools draw their pupils from social backgrounds which are propitious to favourable educational outcomes. It is hoped that the preceding analysis will have shown how this can be done.

15 : Conclusions

A key conclusion that we draw from this work is that the social influences that make it easier for some children to succeed at school than others arise from a number of separate even if mutual reinforcing effects. Typically one considers the influence which are within the control of the school, the quality of the management, the organisation of the lessons, the competence and dedication of the teachers. Likewise there is no lack of recognition of the role of the parents, the discipline that they engender in the pupil, the significance they attach to home-work and the importance they attach to long term goals which may be realised through careful preparation for public examinations and the selection of appropriate subjects and courses.

On the other hand, the fact that Mosaic in its own right acts as such a good predictor suggests that the influence of the immediate residential neighbourhood may be as important as social class more generally in determining the attitudes both of the child and of the neighbourhood. Clearly we are not able to determine whether it is the selection of the neighbourhood as a place to bring up their family that is the reflection of prior values of the parents or whether the expression of these attitudes is facilitated by the norms of the immediate community after they have arrived in it. Nor do we really know whether the influence of the immediate neighbourhood is expressed through significant contacts among the parents or significant contacts among the children, constrained by geography and accessibility in terms of who is available to play with and in terms of with whom they walk or are driven to school.

What perhaps is least evident from the literature but which on the basis of this evidence would seem to be important is the social or peer group effect of the school children themselves and the extent to which it is the homes that children come from as much as anything to do with the school management and the teachers that defines the school ethos.

These issues are relevant to the issue of choice because of the extent to which it is the social background of the pupils that determine school ethos, and peer group pressures as much as teachers who determine how seriously pupils take realising their potential when at school, then real choice exercised by all social classes that gave an equal opportunity for pupils from all social backgrounds to attend the best performing schools, would logically result in a kind of zero sum game. This is because the quality and ethos of what currently seem to be best performing schools would decline to reflect the backgrounds of the newer generations of children from less affluent backgrounds, just as much as the invasion of low income groups into a higher status neighbourhood would undermine the values of the more expensive houses. If choice results in 'customers' electing to send their children to schools which are self evidently better managed, and if this then results in their expansion and to the decline of poorly performing schools, then the objectives of the current ideology will be met. If, on the other hand, choice results in 'customers' electing to send their children to schools whose superior performance relies upon the narrow mix of Mosaic types from which their population is drawn, then attempts to improve collective welfare through the exercise of choice are unlikely to be realised.

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Notes

[1] In many ways this reflects the distinction drawn in much post second world war British sociology between the working class practice of 'immediate gratification' and that of 'deferred gratification' by the middle class – see for example

Dennis, N., F. Henriques and C. Slaughter (1956). Coal is Our Life: An Analysis of a Yorkshire Mining Community. London, Tavistock Publications.

[2] This may of course be changing as the concept of 'rights' becomes more widely articulated by which people people have the right to complain widely about perceived injustices in the system but in a way which is divorced from a need for the system to change to meet everybody's needs. An instance of this was the recent UK general election in which 'masochism' played a part in the Labour Party's strategy. It was accepted that people would 'emote' their resentments to the Prime Minister at staged meetings on television or whilst he was campaigning and that by allowing this act and by Tony Blair 'accepting their pain' they would then be tied to Labour. Of course, the other side of the bargain was that nothing much changed but accepting the complaint and the right to complain was a cathartic act of identification – so the argument seemed to run.

[3] It is less clear whether either gender or ethnicity have provided the basis for a similar social praxis. The arguments in favour of faith schools and single sex schools have usually been made on somewhat different grounds – which is not to argue that the real purpose has been somewhat different. Traditionally it was thought that girls tended to benefit in attainment terms from single sex schools whilst boys benefited from their co-presence. It was argued that girls did better up to the early teenage years but that subsequently their unwillingness to challenge boys in 'hard' subjects like maths and physics tended to hold them back in the crucial years of secondary education (ref to Walkerdyne). This view is probably out of date and there is now a sense that young boys tend to feel emasculated by the presence of clever and hard working girls and are actually held back. The continued dominance of the performance tables by selective and single sex schools provides some support for this claim. There is some a suggestion that, at the top end of the performance league, Indians do best in schools in which they are the dominant group. In neither case however, is it suggested that there is quite the zero sum situation that there is with social class, which is that one social class does well at the expense of another doing badly. At its crudest and most simple, gender and ethnicity (or at least 'race') are ascribed in distinction to the way in which social class is 'achieved'. Going to the wrong school may have all sorts of consequences but changing the child's ethnicity or gender is not one of them.

[4] Mrs Thatcher had, of course, been the Secretary of State for Education who had presided albeit reluctantly over the move to a comprehensive system during the early 1970s. She was responsible for ensuring that

some areas maintained selection which is often held to have meant that neither system ever had a choice to work properly.