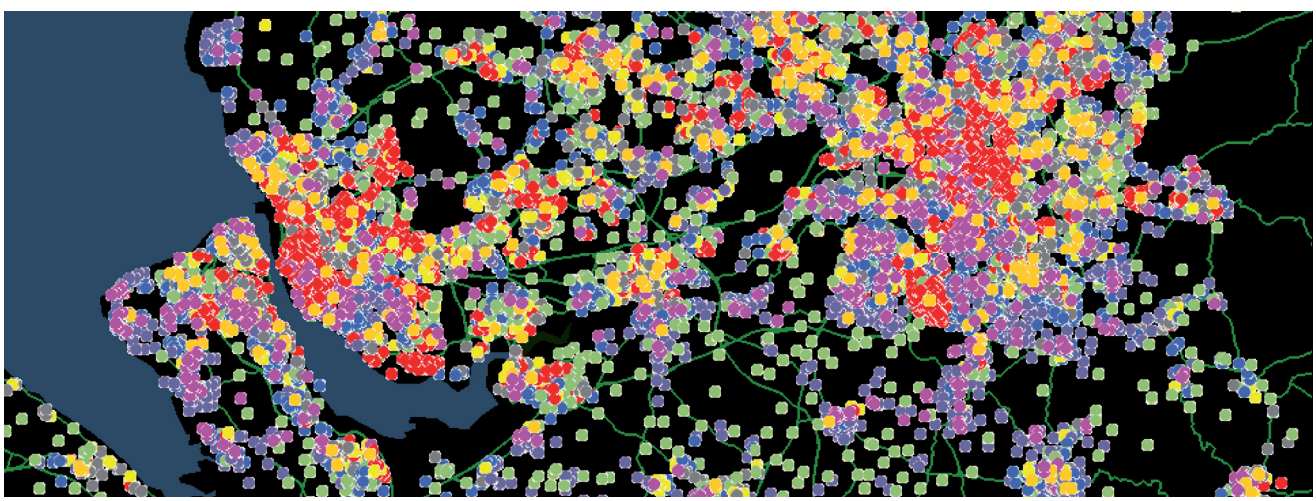
The Predictive Postcode



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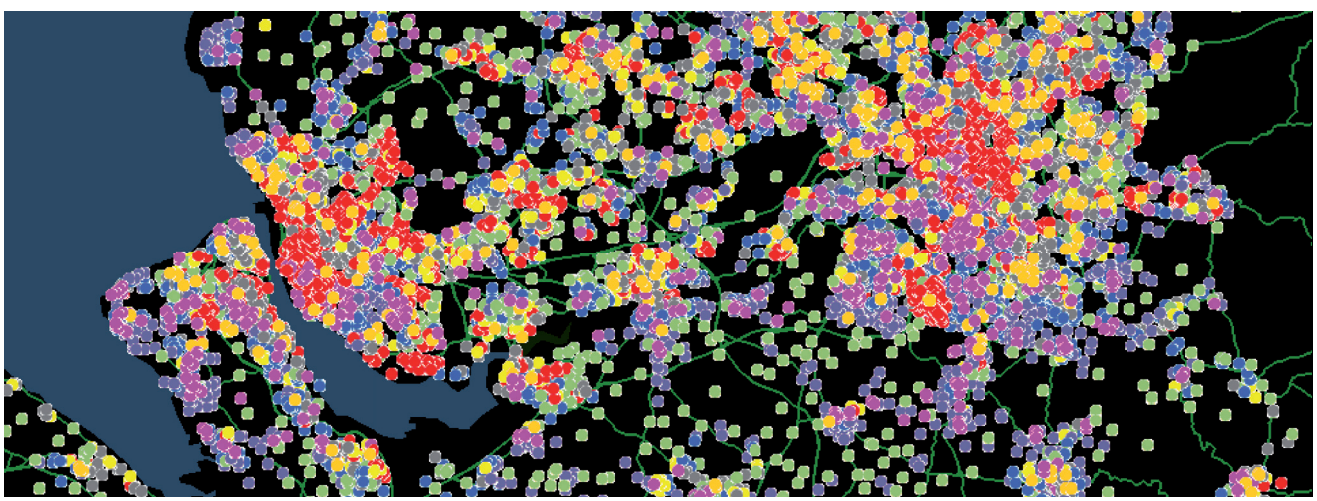
The Predictive Postcode

The Geodemographic Classification of British Society



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1

NEIGHBOURHOODS AND THEIR CLASSIFICATION

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William Turner in his *The Rescuing of the Romish Fox*, first published in 1545 (Swami, 2016: 162)

What sorts of people are passionately concerned about human rights?

A few years ago, a human rights charity commissioned an analysis of the 235,000 adults on its supporter file. Had a civil servant and not a human rights charity commissioned the analysis, or had it been a social scientist attached to a university who delivered it, the most likely output would have been a series of tables in a format similar to Tables 1.1 and 1.2.

Table 1.1 Age of Human Rights Charity Supporters

Age	% of supporters
Aged 15–24	29
Aged 25–44	43
Aged 45–64	17
Aged 65+	11
Total	235,358

Table 1.2 Social Class of Human Rights Charity Supporters

Social class	% of supporters
Professionals and managers	48
Non-manual	29
Skilled manual	10
Semi-skilled	9
Unskilled	4
Total	235,358

But this was not how the analysis was conducted; instead a very different mode of analysis was used, one that has come to be known as *geodemographic profiling.* Instead it was a table in a format similar to Table 1.3 that appeared at the heart of the analysis.

So, what do the various columns of Table 1.3 indicate? Let us start with the categories listed in column A. These are known as *Mosaic* Types.[1] They do not describe supporters in terms of any personal characteristics, but rather according to the types of people most likely to live in the same streets as they do. Each has a code which is organized sequentially, 01–61, within a hierarchic structure, A–K.

Next to these *Mosaic* Types and their associated codes in column B we see the numbers of UK adults living in each Type at the time of the analysis – in total some 46,336,087. So, for example, 366,079 adults live in the geodemographic Type E31, labelled *Caring Professionals*.[2] This happens to be 0.79 per cent of UK adults. Column C reveals how the 235,358 supporters of the human rights charity are distributed across these same categories. So, we see that 9,858 of their supporters, which happens to be 4.19 per cent of the total, are classified as living among neighbours characterized as *Caring Professionals*. Figure 1.1 shows a street typical of that Type.

Column D is a simple index comparing the percentage of supporters who live in each *Mosaic* Type with the percentage of the national adult population; so, in the case of *Caring Professionals*, the index of 530 is obtained when the 4.19 per cent of supporters is divided by the 0.79 per cent of adults and multiplied by 100. The higher this index value, the greater is the likelihood that a resident living in this geodemographic type will be a supporter of the charity. In this example, the figure of 530 indicates that *Caring Professionals* are some 5.3 times more likely to be supporters of the charity than the national average. That is a substantial difference. It is the highest of any of the 61 Types.

Mosaic is an example of what is known as a geodemographic or neighbourhood classification system. There are three features of this form of analysis which warrant particular attention at this point. In terms of operational efficiency, the

Table 1.3 Distribution of Human Rights Charity Supporters and Far-Right Political Party Members by Geodemographic Type

A	B	C	D	E	F	G
Mosaic UK Types	No. of UK adults	No. human rights charity	Human rights charity index	No. far-right political party	Far-right political party index	Liberal/ far-right index
Total	46,336,087	235,358	100	10,652	100	100
A01: *Global Connections*	297,628	6,696	443	13	19	2,332
A02: *Cultural Leadership*	410,972	10,784	517	40	42	1,231
A03: *Corporate Chieftains*	756,157	5,763	150	90	52	288
A04: *Golden Empty Nesters*	571,636	5,598	193	100	76	254
A05: *Provincial Privilege*	856,529	7,037	162	142	72	225
A06: *High Technologists*	1,086,198	5,326	97	190	76	128
A07: *Semi-Rural Seclusion*	743,582	7,474	198	138	81	244
B08: *Just Moving In*	92,664	1,118	238	6	29	821
B09: *Fledgling Nurseries*	552,702	1,298	46	125	98	47
B10: *Upscale New Owners*	746,614	1,983	52	156	91	57
B11: *Families Making Good*	1,268,856	3,521	55	327	112	49
B12: *Middle Rung Families*	1,474,251	4,250	57	400	118	48
B13: *Burdened Optimists*	1,043,034	2,075	39	283	118	33
B14: *In Military Quarters*	69,287	85	24	15	97	25
C15: *Close to Retirement*	1,761,619	6,459	72	413	102	71
C16: *Conservative Values*	1,549,347	3,845	49	367	103	48
C17: *Small Time Business*	1,075,281	5,914	108	307	124	87
C18: *Sprawling Subtopia*	1,410,391	4,981	70	350	108	65
C19: *Original Suburbs*	1,142,253	11,517	199	213	81	246

(Continued)

Table 1.3 Distribution of Human Rights Charity Supporters and Far-Right Political Party Members by Geodemographic Type

A	B	C	D	E	F	G
Mosaic UK Types	No. of UK adults	No. human rights charity	Human rights charity index	No. far-right political party	Far-right political party index	Liberal/ far-right index
C20: *Asian Enterprise*	538,821	1,888	69	52	42	164
D21: *Respectable Rows*	781,005	6,949	175	221	123	142
D22: *Affluent Blue Collar*	1,656,092	3,439	41	579	152	27
D23: *Industrial Grit*	1,137,408	3,926	68	439	168	40
D24: *Coronation Street*	1,465,309	3,196	43	502	149	29
D25: *Town Centre Refuge*	432,647	2,292	104	111	112	93
D26: *South Asian Industry*	411,740	823	39	44	46	85
D27: *Settled Minorities*	651,232	5,804	176	93	62	284
E28: *Counter Cultural Mix*	492,497	9,419	377	54	48	785
E29: *City Adventurers*	472,430	10,112	421	33	30	1,403
E30: *New Urban Colonists*	506,395	13,118	510	54	46	1,109
E31: *Caring Professionals*	366,079	9,858	530	51	61	869
E32: *Dinky Developments*	336,829	2,083	122	61	79	154
E33: *Town Gown Transition*	287,707	5,826	399	24	37	1,078
E34: *University Challenge*	128,021	1,501	231	14	49	471
F35: *Bedsit Beneficiaries*	237,811	2,634	218	32	58	376
F36: *Metro Multiculture*	566,924	2,891	100	55	42	238
F37: *Upper Floor Families*	558,468	1,168	41	123	96	43
F38: *Tower Block Living*	152,026	256	33	25	72	46
F39: *Dignified Dependency*	318,786	831	51	73	99	52
F40: *Sharing a Staircase*	194,737	277	28	13	29	97

Table 1.3 *(Continued)*

A	B	C	D	E	F	G
Mosaic UK Types	No. of UK adults	No. human rights charity	Human rights charity index	No. far-right political party	Far-right political party index	Liberal/ far-right index
G41: *Families on Benefits*	607,928	510	17	143	102	17
G42: *Low Horizons*	1,082,371	1,379	25	266	107	23
G43: *Ex-Industrial Legacy*	1,205,826	1,541	25	333	120	21
H44: *Rustbelt Resilience*	1,185,753	1,829	30	338	124	24
H45: *Older Right to Buy*	1,141,315	1,836	32	286	109	29
H46: *White Van Culture*	1,304,765	3,518	53	429	143	37
H47: *New Town Materialism*	1,012,699	1,328	26	324	139	19
I48: *Old People in Flats*	259,363	308	23	51	85	27
I49: *Low Income Elderly*	553,768	1,950	69	150	118	58
I50: *Cared for Pensioners*	550,815	488	17	90	71	24
J51: *Sepia Memories*	304,527	1,117	72	41	59	122
J52: *Childfree Serenity*	376,338	5,862	307	70	81	379
J53: *High Spending Elders*	538,744	4,249	155	93	75	207
J54: *Bungalow Retirement*	550,903	1,045	37	139	110	34
J55: *Small Town Seniors*	900,733	4,933	108	203	98	110
J56: *Tourist Attendants*	83,593	865	204	19	98	208
K57: *Summer Playgrounds*	171,447	1,027	118	35	88	134
K58: *Greenbelt Guardians*	1,276,747	6,138	95	311	106	90
K59: *Parochial Villagers*	1,081,238	3,619	66	236	95	69
K60: *Pastoral Symphony*	485,001	4,173	169	110	99	171
K61: *Upland Hill Farmers*	166,263	1,484	176	28	74	238

Figure 1.1 *Mosaic* E31 *Caring Professionals*, Park Avenue, Hull, HU5 3ER

feature which most distinguishes a geodemographic profile is how easy it to produce tables such as Table 1.3. All that it requires is for the charity to know the *postcodes* of their supporters. No survey questions need to be asked, no responses processed (Savage and Burrows, 2007; 2009).

In terms of social theory, the feature which most distinguishes a geodemographic profile is that it categorizes people not on the basis of their own personal characteristics, such as age, gender, ethnicity and so on, but on their geographical location, that is, according to the characteristics of their immediate neighbours.[3] Notwithstanding the variety of age groups, genders, ethnic groups and, in particular, *social classes*,[4] who live next door to each other in the same type of postcode, this form of classification often proves just as predictive of people's behaviour as does information held at the person level. This gives powerful support to the belief that personal behaviour continues to be hugely influenced by social norms at the local level, even in the era of social media.

In terms of statistical methods, the feature that distinguishes a geodemographic profile is that it uses what are referred to as *multivariate* categories. Geodemographic categories are multivariate in that the set of variables used to construct them typically represents different dimensions of social character. This is by contrast with social surveys where customer or client behaviour is typically cross-tabulated against a series of separate *univariate* categories such as age, as in

the case of Table 1.1, or the measure of social class used in Table 1.2. Clearly the definition of a multivariate category such as K57 *Summer Playgrounds*, is more complex than the definition of a univariate category such as persons aged over 65. But it does not necessary follow that multivariate categories are any more difficult to interpret than ones built using data representing a single dimension.

When they see a table such as Table 1.3 for the first time, some readers may question how appropriate it is to use a label such as G41 *Families on Benefits* to describe a particular geodemographic type. Others ask on the basis of what evidence can it be possible to justify a label such as B13 *Burdened Optimists*. How literally can a concept such as D24 *Coronation Street* be taken, some may ask?[5] And where can they find the information they need to understand the meaning of *Caring Professionals*?

Other people question whether it is appropriate for public servants to be making use of categories that have been developed for use by commercial organizations. Others fear that if such classifications are the intellectual property of commercial organizations this may limit their use in social scientific research. All these critical questions are ones we address in the chapters that follow.

Moving from the *format* of Table 1.3 to its *substantive implications*, perhaps the most striking is how strongly the level of support for the charity varies between one geodemographic type and another. It may be intellectually reassuring to learn that the most fertile neighbourhood type for the charity is labelled *Caring Professionals*. But is the scale of these geographical differences greater or less than the differences in the degree to which the charity appeals to different social classes? How far is this concentration the result of social pressures, 'peer' or 'neighbourhood' effects in the language of the social sciences? Is it the distinctive social values of its residents that cause the charity to pick up so many supporters among *Caring Professionals*; perhaps this is the reason why residents in these types of postcode are so especially receptive to the campaign for human rights? Or are supporters clustered geographically because *Caring Professionals* are disproportionately found in university towns where there is likely to be a thriving local group?

At a more fundamental level we could ask what are the social and political dynamics that have caused the issue of human rights to resonate so deeply with residents in the neighbourhoods characterized by *Symbols of Success* (the term that is given to the Types in Group A), see Table 5.4 on pp. 114–15 for more details, and to those in *Urban Intelligence* (the term that is given to Group E)? Maybe the emotions of residents in categories in Group B, *Happy Families*, are so invested in the care of their young children that they can't be persuaded to focus on the wider issue of human rights. If Labour-leaning categories in Groups G and H show so little concern for human rights, whereas Labour-leaning categories belonging to *Urban Intelligence* are so exercised by them, what does this contribute to our

understanding of the tensions that divide different groups within the Labour Party for example? There are so many questions of this sort that can arise from a detailed examination of the variations in the index values of the different *Mosaic* Types.

At about the same time as this analysis was being carried out, someone leaked the names and addresses of members of a far-right political party. Columns E and F of Table 1.3 chart the distribution of the party's 10,652 members across the same geodemographic types. It is not surprising that the geodemographic types the party draws its support from are very different to those of the human rights charity. Its most fertile recruiting areas are neighbourhoods classified as D24 *Coronation Street*, D22 *Affluent Blue Collar*, D23 *Industrial Grit* and H46 *White Van Culture*.[6] The likelihood of a person being a party member exceeds the national average by more than 40 per cent in each of these categories.

Tables 1.4 and 1.5 illustrate another commonly used form of geodemographic analysis. The object of an analysis of this sort is to provide broader insight into the lifestyles of particular groups of people, in this case the supporters of the far-right party. Table 1.4 is produced by comparing the geodemographic profile of party members with the profiles of a large number of other behaviours held in what is referred to as a *profile library*, a concept which is explained in greater detail in Chapter 6. From the many hundreds of demographics and behaviours that have been profiled by *Mosaic* this table reveals the ones which are the most *positively* associated with the types of neighbourhood in which support for this far-right party is especially concentrated.[7]

It would interest few readers to learn that employment in lower supervisory occupations and readership of mid-market newspapers were the most distinctive characteristics of the types of neighbourhood where the party finds it easiest to recruit supporters. More interesting but less obvious is that its members tend to

Table 1.4 Characteristics and Behaviours Most *Positively* Correlated with Membership of Far-Right Political Party

Domain	Category	Correlation
Occupation	Lower supervisory	0.790
Newspapers	Popular or mid-market daily newspaper	0.735
Interests	Camping and caravanning	0.701
Employment status	Part time	0.695
Industry	Manufacturing and mining	0.671
Travel to work	Car or van	0.628
Shops visited	Morrisons	0.625
Religion	Christian	0.599
Number of rooms	5–6 rooms	0.593
Interests	Pets	0.591

live in the types of neighbourhood where people like going camping and caravanning. What might we learn from this? Is it that this form of holiday and the far-right party both appeal to a similar group of people, characterized by a strong sense of self-reliance and a dislike of externally imposed controls? Or do they both appeal to patriotic people with little enthusiasm for exploring foreign cultures? Maybe both explanations for the association are valid.

Much more revealing are those behaviours that are most *negatively* associated with people living in the types of neighbourhood where supporters of the far-right party are most numerous. Table 1.5 reveals that the two strongest negative associations are with making international phone calls once per week or more and with households containing adults from two or more ethnic groups. Party supporters, or their neighbours, are also among the least willing to support third world, disaster relief or human rights charities. Maybe such relationships are too predictable to be of any real value, but at least they confirm the ability of geodemographics to identify behaviours which 'go together' even where these data are held on databases which have never been physically linked.

We decided to introduce this chapter with these two practical examples in order to demonstrate the key proposition of this book. It is that the value of geography as a framework for analysing social behaviour is not limited to its ability to reveal the physical location of citizens or customers. It also has

Table 1.5 Characteristics and Behaviours Most *Negatively* Correlated with Membership of Far-Right Political Party

Domain	Category	Correlation
Telephones	International phone calls at least once per week	–0.772
Ethnicity	2+ ethnic groups in household	–0.695
Newspapers	The *Times*	–0.693
Charities	Third world charities	–0.684
Born	Far East	–0.677
Born	Middle East + western central Asia	–0.675
Newspapers	The *Independent*	–0.675
Charities	Medical research charities	–0.669
Interests	Art	–0.660
Newspapers	The *Guardian*	–0.658
Charities	Disaster relief charities	–0.643
Charities	Human rights charities	–0.639
Charities	Deaf charities	–0.636
Charities	Blind charities	–0.628
Qualifications	Degree	–0.626
Charities	Homeless charities	–0.601

the capacity to deliver a deep sociological understanding of the social groups that engage in particular behaviours. Indeed, by virtue of their multivariate nature, some might claim that this is because the social character of the categories that are encoded within a geodemographic classification, such as *Caring Professionals*, are so much more nuanced than the relatively crude constructs that feature in the stub section of a survey questionnaire.

For example, the profile of the charity's supporters is the first of many in this book which will demonstrate the ability of geodemographics to illuminate not just the growing divide between the core values of the metropolitan liberal elite and the conservative working class, but also the cities and parts of cities where these contrasting groups tend to live. A good indication of the depth of this divide can be seen in the 'Liberal/far-right index' contained in column G of Table 1.3. Here the index of support for the human rights charity has been expressed as a ratio of the index for support of the far-right party. At one extreme, in A01 *Global Connections*, this ratio is well over 100 times greater than at the other end of the spectrum, G41 *Families on Benefits*.

How lay people conceive of neighbourhoods

So far we have alluded to some of the integrative capabilities of geodemographics – for example, how it can integrate the social with the geographical, the quantitative with the qualitative, age with class and housing type, the theoretical with the operational. In this section we consider some of the other integrative possibilities of geodemographics as a form of classification. Can it be used to bridge the different ways in which expert and lay (non-expert) groups conceptualize different types of neighbourhood within the city? Or indeed to provide a common language which might stimulate greater cross-fertilization of insights between different professional disciplines?

In the *natural* sciences, academics and professionals typically converse using a commonly agreed set of terms which are consistently defined and applied and which provide a broadly agreed representation of the objects of their study: Linnaeus established conventions for the classification of plants and animals; Arthur Holmes codified absolute dates for classifying geological time scales; the Dewey Decimal classification system is the most widely used method for classifying books in the library; and so on. Where would their respective sciences be without these taxonomic infrastructures?

In the *social* sciences, such sets of terms – classification systems or taxonomies – are less precise and more contested. In contrast to those of the natural sciences they are also less stable over time (Bowker and Star, 1999).

In respect of urban studies the social scientific community is just one among a large number of different groups, some professional, others lay, whose expertise requires at least some understanding of the behaviour of different social groups and the types of neighbourhood in which they tend to live.

Most lay people build up an extensive repertoire of languages with which to describe social groups that have distinctive sets of values and patterns of behaviour. The everyday or *vernacular* language they use for this purpose often draws upon popular and highly mediated personality and behavioural assumptions. It is striking how often their judgements relating to these social groups are articulated using geographic references based on *where* these groups are believed to live: 'Hampstead Intellectuals', 'the Notting Hill Set', 'Sloane Rangers', 'East End Hipsters', 'the man on the Clapham omnibus' and so on. Most judgements of this sort are made instantaneously, without any conscious reflection and with no more thought than people use when inferring the social group a person belongs to from their physical features, gait, accent or the clothes that they wear.

Physical appearance carries hugely more weight in all these forms of judgement than it does in 'expert' modes of knowledge. But this reliance on appearances and the lack of any formal evidence-based or codified knowledge base does not inhibit lay people from making stereotypical judgements. These judgements function more adequately than many experts might have imagined for navigating pathways through an otherwise complex and nuanced urban realm.

Lacking an understanding of abstract and generalized concepts, one might suppose that lay people's confidence in their ability to characterize others by where they live would be limited to the towns, suburbs and individual streets of which they had first-hand experience. In practice, and no doubt aided by the stereotyping and lampooning of which the media is so fond, it is very much down to their ability to interpret visual images that lay people are able to form judgements about the character of places geographically far removed from those of which they have personal, lived experience. For example, few people would have any difficulty recognizing what types of people lived in the streets illustrated in Figure 1.2 or those illustrated in Figures 5.1, 5.2 and 10.1, which appear in later chapters.

Within popular discourses such judgements are the product of an understanding that is mostly tacit, acquired without deliberate intent, expanded incrementally over many years, its depth and detail seldom recognized even by its owners. Most would recoil from any request to communicate their knowledge in an organized, systematic form, finding it easier to associate categories of neighbourhood with visual images rather than the written word. As a result, it is not by accident that the homes displayed in estate agents' windows – and increasingly on their websites (Botterill, 2013) – typically feature photographs of the *exteriors* of vendors' houses and that these photographs are taken from the street.[8] It is a testament to their tacit knowledge that many potential home-buyers can instantly translate a

Church Street, Staverton, Daventry, Northants, NN11 6JJ

Lower Stoke, Limpley Stoke, Bath, BA2 7FR

West View, Minskip, York, YO51 9HZ

Back Lane, Souldern, Bicester, Oxon, OX27 7JG

Figure 1.2 K58 *Greenbelt Guardians*

property's appearance into a judgement of how easily they, or not infrequently their children, would 'fit in' socially with other residents in the street.

Nor is it by accident that when newspapers report the fraud, corruption or other anti-social activities of apparently comfortably-off miscreants, their accounts are invariably embellished by photographs of the homes (invariably described as 'mansions', 'stuccoed' or 'detached') in which the subjects of these stories live. Once again it is visual images that make it possible for readers to locate the social space in which the subjects of these reports have been living, an aspect that is usually more interesting to them than the precise geographic location of their homes. Tacit though the 'common knowledge' of lay people normally[9] is, this seldom precludes them from articulating their observations and sharing them with other people. Indeed, for many people, making sense of fine residential distinctions is an enjoyable subject for social intercourse. Nor is such gossip necessarily idle since, when people search for somewhere new to live, their ability to 'read' the social

character of a street from its physical appearance is critically important in helping them find the right kind of neighbourhood to move to.

But how much of the language of these conversations is used by academic, public sector and commercial groups? After all, most neighbourhoods owe their physical form to previous decisions of planners, local authority housing departments, private developers and volume house-builders, as well as the advice of social researchers and social policy analysts. In order to research these needs it would be surprising, if indeed it were the case, if these agents did not share at least some common language with the sorts of people for whom this housing was intended, what their preferences for different locations and styles might be and whom they would wish to have as neighbours.

How professionals conceive of neighbourhoods

Compared to lay people, most of whom share a broadly common language for describing types of neighbourhood, any discussion about neighbourhoods which involves communications between different professional groups often has to navigate a veritable Babel of languages, each seemingly as unintelligible to each other as they are to lay people. To illustrate this complexity, Table 1.6 lists just some of the groups for whom an understanding of the residential composition of different neighbourhoods is of critical professional importance. In it we examine differences between sociologists and geographers from the world of academia, planners and public servants from the government sector, and marketers and land economists from the world of business. Each differs in terms of: their possible roles; interests; mechanisms for bringing about change; the means by which they might measure the 'success' of interventions; the means by which they attempt to manage conflict; and, particularly important, the sources of data upon which they draw to describe a neighbourhood.

In addition to these professional groups it is pertinent to consider the perspectives of lay groups, residents and citizens, because they too have an interest in what makes a neighbourhood successful. We use the term 'citizens' to refer to residents who involve themselves in voluntary organizations that represent residents' opinions and interests to professionals in the government and business sectors.

Not only do different categories of 'expert' acquire their professional knowledge from different academic disciplines; their claims to expertise also involve distinctive approaches to *descriptive*, *predictive*, *theoretical* and *prescriptive* modes of engagement with neighbourhoods. What differentiates these professionals from others with similar training is the frequency with which they have to test their interpretations of neighbourhood structure against those that are held by lay actors, particularly citizens. It would be much to everyone's benefit if

Table 1.6 Schematic Representation of Different Actors' Approaches to Understanding Neighbourhood Differences

Domain	Residents	Citizens	Sociology	Geography	Planning	Business	Government	Land economy
Job function	Householders	Volunteers	Community development officers, social workers	Transport planners, retail modellers	Planners	Marketers, Market Researchers	Civil servants, police officers, local government officers	Developers, estate agents
Feature of interest	Order, no anti-social behaviour	Active community organizations	Cohesion	Proximity and accessibility	Aesthetics, vibrancy	Consumption of products and media	Client groups, configuration of services	Land ownership
Agents of change	Police	Consultation	Community activism	Infrastructure	Statutory policies	Advertising campaigns	Programmes	Deals
Measure of success	Being recognized in the street, house price appreciation	Size of membership, Victory on planning applications and appeals	Social capital	Network utilization	Approval of policies	Market share	Satisfaction rating, attainment of targets	Yield
Source of data	Neighbours, corner shop, local newspaper	Local authority, FOI	Qualitative studies	Census, official statistics	Registries and gazetteers	Marketing databases, surveys	Commissioned research, Index of Multiple Deprivation	Contacts
Management of conflict	Social pressure	Petitions, judicial review	Public pressure	Migration	Consultation and planning appeals	Budgets	Elections	Market forces

the communication of these differences in understanding of residential structure could be expressed in a common language, both in situations of conflict and when there is a need for the different actors listed in Table 1.6 to collaborate.

Why should different professional groups use different theoretical and conceptual frameworks for describing neighbourhoods and their character? We believe the answer is largely to do with history. That is to say that the particular sources of data on which they have to rely often reflect the methods of data collection that prevailed at the time when their occupational roles were first professionalized and when the theories that govern their professional practice were first formulated. For different professions, these methods can be qualitative fieldwork, statistical surveys, customer records, health and education performance statistics or even what is now described as 'big data' (Burrows and Savage, 2014).

In addition to the different methods and sources of data that professional groups rely on, it is obvious that there are specific concerns that dominate the perspectives from which different professional groups approach their subject. For example, for a geographer or sociologist working in a university *research environment*, urban structure represents a very significant field of research, some of whose long-established and highly respected body of theoretical thinking will be summarized in Chapter 2. An aspect of neighbourhoods which is of particular interest to many of them is the impact on communities of unequal levels of economic resource, political influence and what has come to be termed social and cultural capital (Kennett and Forrest, 2006). Academic researchers also claim distinction from other groups for the critical importance they attach to the understanding of social and economic *processes*, and in particular how they contribute to social change at a local level, and to the different levels of status that are attached to living in particular types of neighbourhood.

Allocating public funds on a geographical basis is central to the activities of many *civil servants*. Virtually any publicly funded programme designed to channel additional resources into areas of greatest need now requires justification based on a conception of the area's level of *multiple deprivation* (see, for example, Shiels et al., 2013). Understanding *why* particular neighbourhoods may be 'deprived', or in what particular respects they are deprived, is not necessarily as relevant to the formal process of allocating programme funds to local schools, hospitals or other public facilities as lay people might suppose. What matters is *how* deprived their populations are.

In recent years, public sector professionals employed by *local councils*, *health authorities* and the *emergency services*, have been exhorted to take more account of local needs and preferences by tailoring the mix of services, the manner in which they are delivered and the channels by which information is communicated to clients belonging to particular population groups. The consequent reconfiguration of service provision requires an ability to assess relative levels of demand not just in individual neighbourhoods but also in the categories of neighbourhood that are represented in their authority's area. Ideally this categorization should be done at

a finer level of granularity than the electoral divisions into which local authorities are divided. Nevertheless, to ensure they receive a fair share of central government funding, they are also obliged to communicate with civil servants using the language of *indices of multiple deprivation* (IMD) (Smith et al., 2015), which ranks areas on a complex but essentially ordinal scale ('league table') of need.[10]

Had space permitted we could also have included in Table 1.6 criminologists, market researchers and a small group for whom an understanding of neighbourhoods is of critical importance, the *managers of the election campaigns* of political parties. As party affiliation weakens and old-established measures of social class become less predictive of voter alignment, these campaign organizers increasingly try to target electors with value sets likely to be aligned with the broad policy positions adopted by their party's leader. The work of these specialists is invariably more effective if, as they do, they categorize the neighbourhoods that voters live in in a way which is consistent with those used by their pollsters when tabulating how respondents intend to vote. These categories need to be intelligible to their media-buying teams and, most of all, to those who advise party leaders on political strategy (Webber, 2006).

Many of the *business analysts* employed in the site location and market planning departments of multiple retailers have degrees in geography. A clear understanding of residential distinctions and patterns of segregation is crucial for this group (Leventhal, 2016) if they are to generate the information needed to ensure that new branches are opened in potentially profitable locations. These analysts' responsibilities often include providing their merchandising department with information on the products and brands that are likely to appeal to the types of consumer living in the catchment areas of existing and new stores. Given the length of time over which investment in a new branch needs to be amortized, analysts often assist retailers' property departments by alerting them to social processes which might result in changes in the future social make-up of the relatively localized catchments served by each new store. For example, a pub group might want to be assured that a potential new property is not in an area increasingly being populated by people with a Muslim background, an immigrant group who generally refrain from the consumption of alcohol. The focus of the retail analyst will therefore be less on social status and power relationships than on the *behavioural* differences that characterize different neighbourhoods.

Estate agents clearly view neighbourhoods in terms of average property prices and their year-on-year movements. But the more successful estate agent is likely to have a 'feel' for homes of different sizes and architectural styles that different social groups prefer – a matter which often involves a highly nuanced sense of people's tastes. To increase the likelihood of sales, the successful estate agent will also assure potential purchasers of social changes that are likely to have a favourable impact on future property values.

With so many different actors, each with their focus on very specific aspects of urban structure, is it any wonder that they share so little common language?

Is it for historical or cultural reasons that these different groups should have developed different terminologies for describing the same types of residential neighbourhood? Perhaps. Or is it that the overall pattern of urban differentiation is just too complex for any one of these groups to grasp, with different groups using different conceptual frameworks to describe different aspects of the same overall pattern? Maybe. Do conflicting social and career interests explain why different groups develop modes of speaking which deliberately exclude outsiders? Almost certainly. Perhaps, as in other fields of study, the problem is a more philosophical one. Rather than it just being an issue of differential social constructions of reality, perhaps the assumption of an ontological unity in what constitutes a neighbourhood is not sustainable?[11] With this we disagree.

Our explanation is rather different. It is that for each group of actors, the concepts by which neighbourhoods are *described* have, over time, become too heavily enmeshed with the metrics whereby the impact of policy changes are *predicted* and performance *evaluated*. For example, it is hypothesized that high levels of deprivation contribute to low educational attainment. Tests confirm the hypothesis. Data are collected regarding the level of deprivation in the postcodes in which pupils live. Specific schools are then awarded additional funding on the basis of a postcode premium. Levels of deprivation, which require to be collected for technical reasons, then dominate the language by which school catchments are then described. Yet no parents, when asked in everyday conversation to characterize either themselves or their neighbourhoods, describe themselves in terms of a score on a national index of multiple deprivation. The reliance on deprivation data to determine funding has the effect of preventing parents from accessing other forms of information which might help them better understand what makes the pupil intake of their children's school different from any other, or indeed how the pupil intake differs from the demographics of the catchment area that it serves.

No one would doubt the need for professionals to employ prescriptive, evaluative and predictive language which is specific to their professions. But it is difficult to see any logical reason why different professional understandings need be based on profession-specific systems for describing the demographics of the population of any residential area. Were a common language to be adopted, if only for description, it would at least be more likely for insights gained in a particular field of knowledge to cross-fertilize others to mutual advantage.

Understanding how neighbourhoods change

Whilst each of these different professional groups[12] might appear to have its own perspectives on the aspects of neighbourhoods which have particular relevance to its professional decisions, there are important respects in which the objects of

their interest will have changed in recent years, as indeed have their needs for conceptual systems. Perhaps the most significant of these is the growing role played by notions of *taste* in various explanatory schemas. The growing importance social scientists now place on this concept as a basis for understanding *social distinction* and *social stratification* – and in particular at the expense of income differences and occupational status – is often attributed to the influence of the French sociologist Pierre Bourdieu (Bridge, 2006; Savage, 2011), especially his book *Distinction* (Bourdieu, 1984).

It is his work in particular that has underpinned the emergence of an approach called *cultural class analysis* in which differences in supposedly autonomous or freely chosen cultural practices and preferences are given at least as much weight as are more deterministic explanations grounded in more economically based notions of what traditionally have been described as socio-economic classes (Savage, 2016; Savage et al., 2015). This perspective has informed a number of neighbourhood studies predominantly in middle class areas (Bacqué et al., 2015; Butler with Robson, 2003; Savage et al., 2005).

It has not just been academic research that has been affected by the apparent weakening of associations between social status, occupational status and household income: marketers and their advertisers increasingly find it more productive to target consumer communications on the basis of their values and tastes – which for example are more aligned with attitudes towards climate change, animal welfare, fair trade and cultural diversity than traditional 'structural' variables such as age and class. Divisions of the city based on values, attitudes and tastes create distinct neighbourhood clusters which are very different to those based on traditional measures of social class, income and wealth.[13]

These are just two of the changes that are beginning to impact upon professional understandings of neighbourhoods. Others include the growing levels of spatial inequality that are of particular interest to geographers and sociologists, whose recent research increasingly focuses on the growing concentration of the 'super-rich' in London at the expense of peripheral regions (Atkinson et al., 2016a; 2016b; Burrows et al., 2017). Likewise, the escalation of property prices, the rapid increase in rents and the growing financial obstacles young families face when wanting to buy their own homes (Filandri and Bertolini, 2016) have just as significant implications for estate agents, developers and consumer marketers as they do for university researchers.

The growth in the size and *diversity* of Britain's ethnic communities – both established and more recent – and the tendency for many of them to cluster together in very specific parts of British cities, also calls for adjustment to the frameworks traditionally used for describing different parts of the city, and further diminishes the appropriateness of divisions based exclusively on income, wealth or occupational status (Catney, 2016).

One effect of the growth of the internet has been to make consumers more aware of the value of information. Fostered initially by the emergence of price comparison sites and subsequently by portals which provide information about properties for sale and movements in average local prices, an increasingly confident citizenry routinely searches for comparative local information on topics such as school rankings, hospital performance and air pollution levels (Burrows et al., 2005). Thus, at the margins, tacit knowledge is beginning to be displaced by measurements based on more formal conceptual systems for comparing areas.

This, we suspect, will lead to competition between purely quantitative descriptions, such as the rankings used by civil servants, which have the benefit of being easy to understand but which tend to be somewhat shallow in descriptive resonance, and the qualitative descriptions, often accompanied by *visualizations*, that are more commonly used by marketers, which we believe correspond more closely with citizens' own tacit knowledge, even if the data derive from unfamiliar sources.

It is these formal measurements and conceptual systems for understanding neighbourhoods that are the primary concern of this book. As we have shown, debates relating to urban structure, social change and the relationship between neighbourhood and social status are rarely conducted according to vocabularies, classifications or taxonomies that have universal acceptance. More often than not, academics, public servants, the commercial sector and members of the public use their own distinct vocabularies to conceptualize neighbourhoods. As we have already indicated, this book chronicles the historical development and contemporary application of one particular mode of understanding neighbourhoods, *geodemographic classification*; it is an approach that can offer some degree of rapprochement between these various vocabularies. Although occasional references are made to it in academic literature, it is an analytic approach that has been developed by, and is most commonly used by, market researchers, business analysts in the commercial sector, political parties, the police and local government.

Geodemographics as a means of categorizing different types of neighbourhood

Geodemographic classifications, an example of which we used to open this chapter, were developed simultaneously in the United States and the UK in the early 1970s and are now widely used both in commerce and local government. They are used to a lesser extent within the academy.[14] The form they now take might be somewhat different to that which pertained when they were originally developed, but the essential insight that underpins their construction remains the same: that if a set

of areas are similar to each other across all widely used measures of demographic structure, they are also likely to be very similar across almost any manifestation of social values, behaviour and consumption.

This observation – 'that knowing where someone lives provides useful information about *how* that person lives' (Harris et al., 2005: 2) – is, however, clearly not one just restricted to the producers of such classifications. Over time it has become a deeply culturally embedded idiom popularized, of course, as 'birds of a feather flock together';[15] this referring to the manner in which people with similar characteristics, interests, tastes, values and so on tend – through various complex mechanisms – to cluster together in close socio-spatial proximity to each other (Cheshire, 2012).[16] We will discuss some of these mechanisms throughout the book, largely through empirical examples. However, it is worth pointing out at the outset that though homophily – love of the same – is manifest in many facets of social life (McPherson et al., 2001), it is perhaps nowhere more noticeable than in where people end up living (Bishop with Cushing, 2009; Savage et al., 2005).

We will return later in the book to examine some of the mechanisms through which social space comes to be 'segmented', 'clustered' or, as Batty and Longley (1994) prefer, 'fractal'[17] in its form. However, it has long been known that there exists a strong mathematical basis for accepting that a range of locally orientated neighbourhood behaviours by individuals and households can lead to the emergence of 'segregated' socio-structural spatial forms at an urban scale that were not necessarily the intended outcomes of the actors engaging in the original behaviours. The classic statement of this is Schelling (1971), who demonstrates that even small individual preferences for living close to others 'similar' to oneself – on whatever dimensions – can lead to hugely disproportionate aggregate residential 'segregation' effects.[18] Of course, a whole set of other socio-economic, cultural, political and, increasingly, technological forces now also contribute to the emergence of complex fractal geographies (Ellison and Burrows, 2007) – increasingly recognized as occurring not just across *lateral* space, as traditionally mapped, but increasingly in terms of *verticality* as different socio-economic and cultural groups find themselves segregated at different levels in multi-storey residential buildings (Graham, 2016).

In the next two chapters, we will detail the antecedents of the geodemographic classifications that are widely used today. It is a complex tale that will take us to the London of Charles Booth at the turn of the twentieth century, to rural Wisconsin in 1915, to the Chicago School of Sociology in the 1920s and 1930s, to the work of sociologists, geographers and planners in New York, London and, crucially, Liverpool, to the commercial corporate world of multinational marketing organizations from the 1980s through to the police and local government in the 1990s; a major theme will be that, although the practice of

geodemographic classification originated in the world of the academy and urban policy, it has been equally relevant to the worlds of commerce and local administration (Burrows and Gane, 2006).

Geodemographic classifications in the UK mostly operate at the level of the *unit postcode*,[19] such as PL19 9JL, and describe in the region of 60 or more different types of neighbourhood. Their purpose is not just to describe the character of different forms of neighbourhood (Parker et al., 2007): their unique role is to facilitate the linkage of information from different sources. For example, in an election campaign a political party is likely to commission pollsters to track the salience of different issues among different groups within the electorate. For the results of these polls to drive the selection of streets that should be canvassed or the scripts of telephone callers, the categories used to report the poll findings need to be consistent with the categories used by letter-box distribution companies and with at least one of the fields held on the database from which electors are selected for telephone canvassing and for selecting the most appropriate telephone script to use.

Likewise, the manufacturer of packaged goods, having used research surveys to identify the social groups to which a particular product can be most profitably sold, will want to know the television programmes which this *target group* is most likely to watch; the leaflet distribution sectors with the highest proportions of letter boxes belonging to households in this category and the retail outlets whose catchments cover the largest proportion of consumers of this type. To co-ordinate these activities it is critical that, when they communicate with the packaged goods manufacturer, market research companies, television stations, door-to-door distribution companies and national supermarket chains employ a consistent set of categories within a commonly agreed taxonomy.

As we have already seen, though, the reason why geodemographic classifications of neighbourhoods operationalized at unit postcode level are so widely used is because they are able to predict all manner of behavioural outcomes of interest to their users. When the UK census office first published statistical information at the neighbourhood level in 1971, it was reasonable to assume that what caused behaviour to differ from neighbourhood to neighbourhood was the relative mix of people or households based on categories such as age, education, housing tenure and occupational status. Since then countless research projects have shown that, whilst differences in the population mix are clearly important, the neighbourhood in which a person lives also plays a significant incremental role in influencing that person's likely behaviour (Webber, 2004). For example, two groups of individuals, precisely matched on every single demographic such as age, gender and social class, are likely to vote in different ways if the neighbourhoods in which they live have different population mixes. The performances of their children in Key Stage educational tests are also likely to differ. So too will the food they

eat and the destinations they choose for their annual holidays. In other words, a neighbourhood exerts an independent and autonomous effect in its own right. The results of this process are, as already mentioned, often described as *neighbourhood effects* and this is a subject we examine in greater detail in Chapters 6 and 7.

The phenomenon of neighbourhood effects is recognized by many different groups of experts involved in the research and delivery of services at a neighbourhood level. What geographers describe as neighbourhood effects are similar but not wholly synonymous with what sociologists understand as peer effects, transmitted via social networks and cultural norms.[20] Public servants now subscribe to the belief that living in a disadvantaged neighbourhood confers incremental disadvantage to all residents irrespective of their personal circumstances. As we have discussed, it is on the basis of this belief that central government devised and applies the IMD to the prioritization of neighbourhoods for area-based programmes. Notwithstanding the growth in online shopping, marketers are keenly aware of the influence of neighbourhood on the brands that people purchase and the channels they use to undertake transactions.

What is less clearly understood is just how these 'neighbourhood effects' come into play. Is it that the consumer searches out a neighbourhood where he or she expects to find people with like-minded values, tastes and consumer preferences? Is it that groups of people whom we assume to be similar when we categorize them on the basis of age, gender or social class, happen in practice to be less uniform than we imagine, these traditional forms of categorization being inadequate in capturing important differences in attitude and lifestyle? Is it that over time the mix of products and services that can be bought from local shops affects the norms and expectations of local residents? Or is it that the prevailing ethos of a neighbourhood has a direct impact on what are considered normal forms of behaviour?

We would argue that it is the last of these explanations, albeit in tacit form, that motivates parents seeking to live within the catchment area of what, on frequently used measures, is considered a 'good' school. Consciously or unconsciously parents understand that notwithstanding differences in teaching standards and facilities, their children's personal development and educational attainment will almost certainly be affected by the social backgrounds of the other children in their class (Webber and Butler, 2007).

To many people it appears intuitively self-evident that a multivariate taxonomy of neighbourhoods will be less effective in predicting differences in personal behaviour than a statistical model that uses multiple regression – or something similar – to add together the explanatory power of a series of separate single-dimensional classification systems such as age or class when applied to individual people (think back to Tables 1.1 and 1.2). After all, by aggregating individuals of different genders, ages, ethnicities and social classes to create area averages and then classifying neighbourhoods on the basis of many different

characteristics at once, it would seem inevitable that much of the original variability in individual behaviour would be lost. Though this may appear intuitively self-evident, statistical studies consistently find that the type of neighbourhood a person lives in is seldom a less good predictor of individual behaviour than any single demographic variable.

There are also a number of technical reasons why a taxonomy based on neighbourhood proves particularly useful for certain categories of user. One relates to the homogeneity of the cases being classified, in the case of a neighbourhood classification, individual postcodes, in the case of individuals specific age bands, social classes, levels of educational attainment and so on. As a general rule, the individual postcodes that fall within the same taxonomic category tend to be more uniform in terms of their behaviours and consumption than are the citizens, consumers or residents that are grouped together on the basis of a one-dimensional measurement system such as age, gender or occupational status.

This has great significance for marketers, retailers and those who deliver public services, such as policing, health and education, all of whom need to be able to form a judgement about the relative demand for services in specific geographical areas. When predicting levels of demand, whether for products or services, a mathematical model based on multivariate taxonomy at the neighbourhood level is likely to be much more reliable than a model based on individual characteristics whether at the person or household level.

Table 1.7 illustrates how *Mosaic* can be used to build a simple model for estimating the relative level of demand for a grocery product within a localized

Table 1.7 Simple Model to Predict Consumption of a Grocery Product in a Local Catchment Area

A	B	C	D
Mosaic Type	% households in catchment area	National propensity to purchase ketchup (UK mean = 100)	Column C × Column B / 100
D26: *South Asian Industry*	10.0	84	8.4
G42: *Low Horizons*	32.7	142	46.4
G43: *Ex-Industrial Legacy*	31.3	141	44.1
G45: *Older Right to Buy*	26.0	116	30.2
Overall index on ketchup for catchment area			129.1

catchment area (Sleight, 2004: 380). In this example, the catchment area contains four *Mosaic* categories only, and the grocery product for which demand is to be estimated is ketchup. Essentially the model weights the proportion of the catchment area in each *Mosaic* type by the national average propensity of consumers of that type to purchase the product. In this example catchment area per household consumption is estimated at 29 per cent above the national average. Such a model is likely to be most reliable for a product whose pattern of consumption has no regional bias and whose variations in consumption are captured by the different social dimensions that are used to build the classification. It will almost certainly be more reliable than one based solely on social class, or on age, or on ethnicity.

In summary, there are a number of different qualities that may render a taxonomy of neighbourhoods effective, not just its ability to capture observable economic and socio-cultural differences. To be effective it needs to be widely adopted by different professional groups who participate in the market place for identifying and reaching target groups more efficiently. It also needs to define neighbourhoods at a level of scale which matches the scale at which neighbourhood effects really do make a difference to people's behaviour. The neighbourhoods that fall within each category also need to be sufficiently similar in terms of all significant dimensions of social differentiation that are known to influence variations in consumer demand or social need on a geographical basis.

The nature – if not the detail – of geodemographic classifications should now be apparent. There is much about their history, construction and use that is of interest, and we will detail this in the chapters that follow.

Notes

[1] The classification used here, by way of an introductory example, is the *Mosaic* classification originally released in 2003 by Experian. It is the most widely used of a number of different geodemographic classifications.

[2] As we will discuss in later chapters, this is the 'commercial' label attached to this particular neighbourhood type. Such labels appear in italics. A more discursive 'public-sector' describes the type as: 'Well-educated singles and childless couples colonizing inner areas of provincial cities'.

[3] This is perhaps one of the main reasons why so many people, when invited to comment on the validity of the *Mosaic* code they are classified under, respond that it is a more accurate classification of their neighbours than it is of them!

[4] The analysis of social class has recently seen something of a revival, perhaps because of the success of the *BBC Great British Class Survey* (Savage et al., 2015). We hope to show in this book how a geodemographic mode of analysis – although not directly designed with academic social science in mind – can offer

major new analytic and substantive insights, not just in relation to social class but also into the manner in which social class intersects with age, gender, geography, ethnicity and other univariate categorizations.

[5] These neighbourhood types are described in the public-sector version of the classification, in turn, as: 'Families, many single parent, in deprived social housing on the edge of regional centres' (*Families on Benefits*); 'First generation owner occupiers, many with large amounts of consumer debt' (*Burdened Optimists*); and 'Low income families living in cramped Victorian terraced housing in inner city locations' (*Coronation Street*).

[6] The last three of these types, in order, are described in the argot of the public-sector version of the classification as: 'Comfortably off manual workers living in spacious but inexpensive private houses' (*Affluent Blue Collar*); 'Owners of affordable terraces built to house nineteenth-century heavy industrial workers' (*Industrial Grit*); and 'Residents in 1930s and 1950s London council estates, now mostly owner-occupiers' (*White Van Culture*).

[7] To be clear, it is not possible to attach such profile data to the *actual* cases, only to the postcode types within which such people live. Thus, what follows might best be described as a very simple form of spatial micro-simulation, which needs to be mindful of the potential for ecological fallacy.

[8] Although we must note that in recent years there might be some evidence that the availability of exterior shots of flats and houses is no longer such a strong norm. Especially in 'new build' developments and upmarket renovations on 'brown-field sites' it seems to be the case that visualizations of interior design aesthetics are prioritized over external views of the buildings.

[9] We say 'normally' here because, as we discuss later, there is some evidence that with the on-going 'informatization' of neighbourhoods (Burrows and Ellison, 2004) *some* members of the public (normally the more affluent and/or better educated) do appear to be developing a more codified, data-driven sense of neighbourhood differences; a process likely to accelerate with the increasing usage of 'geoweb' resources (Smith et al., 2016) able to popularize a wide range of different envisionings of local areas (including some of those used by different professional groups, to be discussed in what follows).

[10] The IMD is going to reoccur as a backdrop throughout this book so it is worth a brief excurse here, at the outset. The IMD has been through various iterations since 2000. In its most recent iteration, 2015, it takes data from various official sources at the census Lower-layer Super Output Area (LSOA) across seven different domains – (1) income, (2) employment, (3) health and disability, (4) education, skills and training, (5) barriers to housing and services, (6) living environment,

and (7) crime – and, through a complex set of statistical procedures (Smith et al., 2015), ranks each of the 32,844 LSOAs in England from the most to the least deprived. However, this does mean that two LSOAs that are ranked at the same point on the scale might be very different *types* of places, their equivalent location on this particular measure of multiple deprivation deriving from a very different combination of attributes.

[11] Perhaps, as in fields such a medical anthropology (Mol, 2002), we have to accept the cognitive discomfort which results from the possibility that we are working with multiple ontologies that only rarely cohere into a unified object of study.

[12] All of which, to a greater or lesser extent, were once conceptualized by Pahl (1970) as 'urban managers' – unified only to the extent that they were able to influence the allocation of urban resources and thus mediate recursive relations between what on some occasions he termed 'spatial patterns and social processes' and, on others, 'urban processes and social structure'. However, Forrest and Wissink (2017) are of the view that, under contemporary circumstances, such a conceptualization now appears hopelessly dated.

[13] A stark demonstration of this was recently published in the New York Times – www.nytimes.com/interactive/2016/12/26/upshot/duck-dynasty-vs-modern-family-television-maps.html. The article examines 50 different maps to demonstrate very strong associations between preferences for various TV shows and a range of cultural and political attitudes. Neighbourhoods in which the TV show *Duck Dynasty* was popular were amongst the most likely to have voted for Donald Trump.

[14] A number of competing commercial geodemographic classifications have been developed over the years: *Acorn*; *Cameo*; *Censation*; *Likewise*; *Locale*; *Mosaic* (on which we will focus, for reasons that will soon become apparent); *P*^{2} *People and Places*; *PRIZM*; *Sonar*; and others. A number of non-commercial classifications have also been produced, the most commonly used of which is the OAC: www.opengeodemographics.com. Details are included in the Appendix to this book.

[15] The earliest reference to this is noted at the head of this chapter.

[16] It is worth noting how Claritas, the owner of *PRIZM*, a geodemographic classification widely used in the United States and discussed in the next chapter, asserts in its promotional literature that it is a 'fundamental sociological truism that "birds of a feather flock together"…[and that]…"You are where you live"' (quoted in Goss, 1995a: 134).

[17] The term 'fractal' is used to describe a pattern which results from a series of discrete and independent decisions which, without there being an overall plan, nevertheless result in the creation of a seemingly organic and self-organizing pattern.

[18] A simple computer simulation of this is available here: http://projects.indicatrix.org/segregation.js/. For a discussion about the broader influence of this model on analytic and political thinking about the urban form, see Fuller and Harwood (2016).

[19] Postcodes are structured hierarchically, supporting four levels of geographic unit: *Areas* (e.g. PL) of which there are currently 124; *Districts* (e.g. PL19) of which there are currently 3,114; *Sectors* (e.g. PL19 9) of which there are currently 12,381; and *Unit Postcodes* (e.g. PL19 9JL) of which there are currently approximately 1.8 million that are 'live'.

[20] For example, neighbourhood effects can operate through common exposure within a local area to the values and behaviours of groups of people very different from oneself, such as members of diverse immigrant communities, as well as people with a similar outlook. Peer-group effects only operate through exposure to local others whom one perceives to share a common set of values and aspirations. In a sense, therefore, peer-group effects can be considered as constituting a subset within the larger set of neighbourhood effects.