

**THE HOUSING FORMS AND URBAN MORPHOLOGY OF POVERTY
AREAS IN THE LONDON BOROUGH OF ISLINGTON.**

By

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Abstract

This research compares the urban morphology and house forms of three areas in the London Borough of Islington. It assesses their level of poverty and compares them with Charles Booth's survey of the London poor at the end of the 19th Century. The objective of the research is to identify and analyse the similarities and differences in the urban and housing characteristics of poverty areas between Booth's and modern times, with the aim of understanding the spatial distribution of poverty in present day Islington. The analysis gives an insight into the underlying spatial elements and issues that characterise the distribution of poverty in these areas and how these issues are related to the different housing forms found within the areas. More specifically, it addresses the question of whether there is any meaningful relationship between the localised distribution of poverty and any specific spatial or housing element. The analysis is contextualised within the socio-economic framework of the study areas provided by Neighbourhood Statistics (www.neighbourhood.statistics.gov.uk) through 2001 Census and other surveys' data. The methodology focuses on devising a system to summarise and analyse poverty data at the street block level and highlights the need for such summaries in order to relate these social data to the urban environment. The analysis shows that a number of spatial, architectural, market, and policy factors interact to shape the distribution of poverty and identifies them in order to evaluate their relationship to people's ability to create wealth. The research concludes that, although much of the spatial distribution of poverty is dictated by the intervention of the Welfare State as well as being driven by the private market, this is also related to: a) a particular spatial property of the built environment, known as *choice*¹ in *space syntax*² theory, and, b) specific characteristics of housing forms: the frontages of the built form and the space-use division of the public realm.

¹ *Choice* in practice measures the 'flow' of movement through space and is calculated by counting the number of shortest paths connecting all spaces to all other spaces within a specified distance.

² *Space syntax* is both a theory and a method for quantitatively describing patterns of spatial layout and relating these patterns to social activities.

Key words: Poverty, Islington, Urban Morphology, Housing, Space Syntax, Charles Booth.

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Abbreviations

DTLR: Department for Transport, Local Government and the Regions.

EPSRC: Engineering and Physical Sciences Research Council.

GIS: Geographic Information Systems.

LLOA: Lower Layer Output Area.

LSE: London School of Economics.

OS: Ordnance Survey.

UCL: University College London.

Introduction

The ability of people to create wealth and sustain themselves is closely related to a number of factors that interact to shape the social make up of society: the skills that one has to offer for employment or self-employment, the availability of a demand for those skills and the accessibility to the resources needed to gain and apply one's skills. This latter factor includes a variety of elements that are all related to the environment surrounding one's residence: the accessibility of educational and leisure resources, job opportunities and training, and, more generally, social interaction and networking as well as the quality of the environment.

The questions posed in this research are based on the idea that the distribution of poverty is related to the environment in such a way that it is associated to spatial properties that either facilitate or impede the above process of wealth creation. This research stems from relatively recent developments both in the analysis of the spatial aspects of poverty as well as advances in computerised systems to analyse geo-referenced data and perform morphological analysis, such as Geographic Information Systems (GIS) and extension tools to perform space syntax analysis within these systems. Space syntax is the technique selected by the author to analyse and assess the urban morphology of the study areas in this thesis. It is a theory about spatial configuration, originally conceived by Hillier and Hanson (1984) to analyse the social effects of spatial designs, and comprises a set of techniques to measure different characteristics of space, which are defined and explained throughout this thesis and summarised in Appendix I.

The recent theoretical developments in accounting for spatial elements in analytical discussions on the distribution of poverty comprise of relationships which were found between areas' population turnover and deprivation (Bailey and Livingston, 2007), low-skilled employment and commuting distances (Green and Owen, 2006), as well as the localised distribution of poverty and space syntax measures of *local integration*³ in Victorian times (Vaughan, 2005 and 2007). These publications will be discussed in more detail in the literature

³ *Local integration* measures the relationship between spaces and other spaces closely connected to each other and examines the small-scale relationships of spaces in a system.

review and highlight the potential of spatial analysis in understanding patterns in the distribution of poverty.

This thesis aims to understand the relationship between localised distributions of poverty and the urban and housing forms of the neighbourhoods in which they are found. It addresses the relationship between poverty, urban environment and space, which is rarely analysed by social researchers. More specifically, it addresses the issue of whether there is any significant relationship between the distribution of poverty and any particular spatial or housing element in an Inner London borough.

The objectives of the research are to summarise relevant data in order to map the distribution of poverty in three areas of Islington at a fine detail, and to statistically analyse the distribution with space syntax techniques and a survey of the housing forms. This analysis is then compared to the distribution of poverty in the same areas in 1899 as it was mapped and later published by Charles Booth in his book *Life and Labour of the People in London* (1902). His work gives a detailed insight into the distribution of deprivation in London, however the maps are more representative of social conditions rather than poverty as the criteria for classifying the separate street blocks comprised “a combination of different factors such as regularity of income, work status and industrial occupation” (Vaughan, Chatford Clark, *et al*, 2005). Below is an example of Charles Booth’s map showing different classes from the lowest (black) through very poor and poor (blue), mixed (purple), the ‘fairly comfortable’ (pink) to the middle-classes (red) and upper-classes (gold).



Fig. 1. Detail from the 1899 Charles Booth map of poverty centred on the Highbury and Islington station; Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

The comparison between these eras was undertaken to highlight if and how the distribution of poverty changes overtime along with changes in housing and the urban form.

The structure of the thesis is such that the subject matter is introduced firstly through a review of the relevant literature on the socio-economic situation of Inner London, the distribution of poverty, Charles Booth's analysis, and studies on spatial elements in relation to deprivation. This is followed by an overview of the process which led Islington to be characterised by its current socio-economic and housing make up. The methodology used to analyse the distribution of poverty in the three study areas and its limitations are then discussed. The findings from the application of the methodology are related with regards to the borough-wide level after which the detail of the three study

areas is analysed firstly by assessing their socio-economic make up, secondly, by analysing the distribution of poverty in relation to spatial measures, thirdly by comparing this with the distribution of poverty and the spatial measures of Victorian times, and finally by comparing the housing forms of the three study areas. The results are then critically analysed to understand their meaning and significance in view of both the methodological limitations and of other scholars' findings on the relationship between space, housing and poverty as it is related in the literature review in the following chapter. Finally, conclusions are drawn on whether there is any meaningful relationship among these elements and the implications of the findings for research are discussed.

The innovative aspect of this research is twofold: firstly, it lies in creating fresh summaries of poverty data at a scale which has not been done before, except by Charles Booth himself and by Vaughan (forthcoming) who tested this methodology for contemporary analysis⁴; and secondly, it addresses the relationship between these data and spatial properties, which, although is not a new method to analyse the distribution of poverty, has only previously been used to analyse the distributions recorded by Charles Booth (Vaughan, Chatford Clark, *et al*, 2005 and Vaughan, 2007) rather than being applied to the contemporary situation.

⁴ The testing of this methodology formed the principles according to which the author decided to use proportions of benefits by street segment as a proxy for poverty: "the data were taken as disaggregated per full postcode, then re-aggregated to a spatially meaningful summary by street segment... Council Tax data were provided by the council as an excellent source for the number of residential units in each segment in order to calculate the proportion of benefit recipients in each street segment". (Vaughan, Internal Report, EPSRC GR/S26163/01).

Literature Review

The origins of the concern with the distribution, character and make up of poor areas in inner urban neighbourhoods of London are to be found at the end of the 19th Century, along with the development of the railways, the fast urbanisation and immigration to the boroughs surrounding Central London. Jeremy Bentham formulated some early ideas about space and poverty, including ideas on definition of space and surveillance in order to address the problems of an 'ill town' (Vaughan 2005, p.1). This concept was later elaborated by James Buckingham, who wrote about the need for a high quality built environment and easily accessible urban space in order to create a 'model town' (*Ibid*, p.2). Social investigation into the poor had been undertaken before Charles Booth's surveys. These works included Mayhew's descriptive accounts of the London poor (Mayhew 1861), as well as the data collection of the 1881 census, and Hyndman's survey of the poor published in 1885. However, the detail of Charles Booth's enquiry into the distribution of wealth and poverty along each street of a great part of London has a finesse that can compare to modern standards of data collection and analysis. His effort was partly driven by his criticism of the contemporary and earlier social investigation mentioned above, such as Hyndman's survey (Orford, Dorling *et al.* 2002, p.26). Charles Booth's data were compared to modern census data by Orford, Dorling *et al.* (*Ibid*), who summarised them by 1991 census wards. This is a valuable summary as it shows a gradual disparity in London's wealth from west to east, and a sharp one between north and south, marked by the river. It also shows – in the figure below - the mixed wealth nature of the southern wards of the borough of Islington, which appears to act as the transitional boundary from the wealth of the west to the poverty of the east.

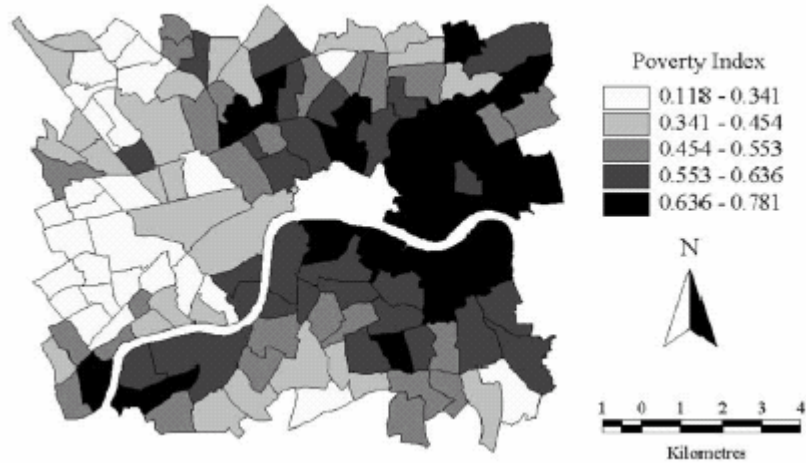


Fig. 2. Distribution of relative poverty in inner London in 1896 by 1991 census wards. From Orford, Dorling *et al.* 2002, p.31.

Orford, Dorling *et al.* argue that Booth's analysis is relevant to contemporary social analysis because "despite an overall rise in the standard of living, the social hierarchy of areas of London has not significantly changed" (*Ibid*, p.34) as their analysis of poverty in 1991 shows in the figure below.

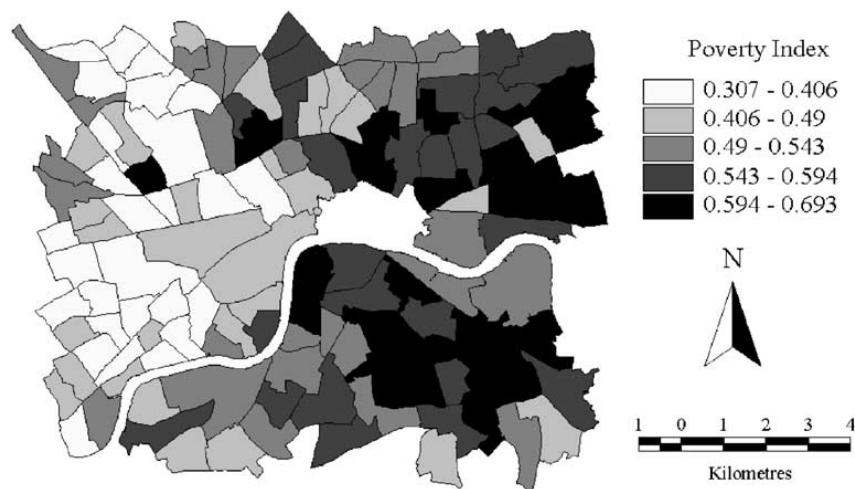


Fig. 3. Distribution of relative poverty in inner London in 1991 by 1991 census wards. From Orford, Dorling *et al.* 2002, p.32.

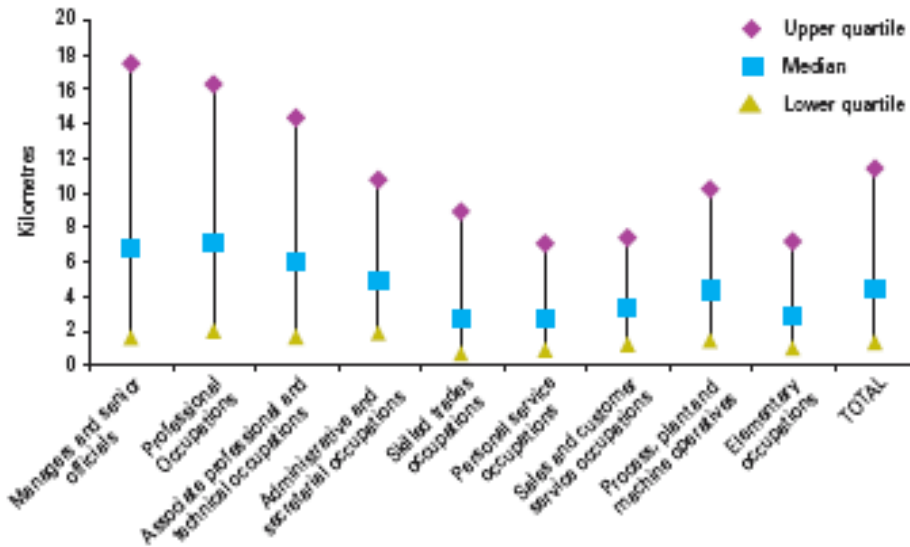
Similarities between the patterns of deprivation found by Charles Booth and contemporary patterns were also acknowledged by the DTLR, as reported by Vaughan (2007, p.233).

Contemporary studies on poverty focus on demographic make up, educational attainment, employment rates, services, and housing provision. Although all these studies are extremely valuable in providing an insight into the nature of

poverty and baseline information to address the issues related to it, they rarely highlight the role of space in determining poverty or analyse the relationship between this and the built environment down to the street block level, as Booth did in his analysis. Recent research into the dynamics of poverty has focused on population turnover (Bailey and Livingston 2007) and on access to work both in terms of employment structure and geography of job supply (Green and Owen 2006). Their findings with regards to London are particularly relevant to this study.

Bailey and Livingston aimed to understand the relationship between areas' population turnover, their level of connection (the extent to which people migrate between deprived and other areas), and their level of change (the impact of migration on the social mix – defined by educational attainment). The conclusions they draw from their analysis is that London is different from the rest of country in that it can be shown to have the most modest relationship between stability and falling deprivation (Bailey and Livingston 2007, p.58). From this they suggest that in London less-deprived individuals are more likely to move into poor areas than in the rest of the country, possibly as a means of entering the housing market and due to affordability problems. This is also due to the demographic make up of London, which contains a higher proportion of young people than the rest of the country, the concentration of which Bailey and Livingston found to generally drive the higher turnover rates (*Ibid*, p.xi).

Green and Owen's analysis revealed not only an increased polarisation between multi-earner and no-earner households, but also "concentrations of worklessness... in local authorities classed as 'mining/manufacturing' or 'cities/services'" (Green and Owen 2006, p.5), as well as the spatial fact that people with poor skills overall travel shorter distances in order to work than their higher-qualified counterparts, as shown in the picture below:



Source: Table W205, 2001 Census.

Note: home workers and people living and working in the same ward are given an estimated intra-ward travel distance. Those with unknown workplaces are excluded.

Fig. 4. Average commuting distance by occupation, 2001 – England and Wales. From Green and Owen 2006, p.74.

The low commuting tolerances that they found in unemployed and low-skilled people are of particular relevance to policy-makers, and they highlight the fact that the supply side of jobs (their availability and location) and the demand side (people's skills) play a combined role in characterising the distribution of poverty (*Ibid*, p.7). They also highlight the scale at which researchers need to analyse the environment in order to assess if the resources needed to produce wealth are available and accessible to the most deprived and lowest skilled groups.

Bailey and Livingston (2007, p.65) concluded that turnover differences between deprived and non-deprived areas are generally perceived to be higher than the levels shown by the data, possibly due to stigmatisation of these areas. Although their analysis excludes migrants from outside the UK, it not only shows that deprived areas are not as prone to 'lose' people with higher qualifications and employability as it is generally perceived, but also suggests that reasons for persistence of poverty and levels of turnover must lie somewhere else: "although there is a tendency for those with higher qualifications to move away from deprived areas on balance, the net effect on

the social mix of deprived areas is very modest and would be relatively offset by people- or place-based interventions” (*Ibid*, p.66).

The peculiar situation in London, where a higher proportion of young and less disadvantaged people take up residence in deprived areas offers both advantages and disadvantages for regeneration; the make up of London creates opportunities for deprived areas, often leading to gentrification of specific locations, but it also poses a risk of further polarisation and displacement of the poorer sections of society outside London or in very localised pockets of deprivation within it.

This paper argues that it is important to understand small-scale variations in the urban fabric of deprived areas, especially in the dense environment of Inner London, where the housing market is such that the very rich are often physically located very near the poor. Booth’s street block analysis was shown by Vaughan, Chatford Clark, *et al.* (2005) and Vaughan (2007) to be able to capture the fine detail of these variations in the environment of Victorian London. In particular their analysis showed that “fine-scale spatial variations can give rise to conditions of spatial and social segregation” (Vaughan 2007, p.233). Studies by the Space Syntax Laboratory at University College London (UCL) and Space Syntax Limited over the past twenty years have found that certain spatial properties of the urban fabric correlate with different variables affecting social exclusion, including ‘social malaise’ and crime (Hillier 1996). The nature of space syntax analysis at the street block level and the ability it has shown to quantify relational properties between spatial characteristics and detailed social data (Vaughan 2007, p.233) makes it an ideal technique to analyse the localised variation in the urban morphology of deprived areas in the dense and mixed environment of Islington, as well as allowing for comparison with Charles Booth’s data. The context in which morphological changes take place in small Inner London neighbourhoods was analysed by Hanson in her review of design ideas that shaped the changed form of Arnold Circus in Tower Hamlets and Somers Town in Camden (Hanson, 2000). In both cases her analysis showed that the areas lost their direct link between the façades of buildings and the surrounding streets, where windows often replaced the former front doors of terraced houses on a classic street system. The transformed areas channel movement through railings and fences through which open

space is visually, but not physically accessible. These areas also faced a 'reversal' of dwelling blocks by which residents' access is placed in the deepest spaces of the circulation system; the new morphology of these areas was shown to be a "density-minimising morphology, where the open space dominates and controls the arrangement of the buildings" (*Ibid*, p.99). Hanson argues that this type of morphology is spatially little varied, is "rule-governed", "loaded with social information", and "less capable of absorbing local change" (*Ibid*, p.99). This is particularly relevant to the social, cultural and economic make up of London, which is highly mobile and varied. Persistence of deprivation pockets in Inner London may be related to these areas' physical inability to adapt to cultural and economic change. Hanson's findings highlight the physical nature of what is currently perceived and stigmatised as 'estate' as opposed to 'street', which "completely inverts the original meaning of the term 'estate' from its earlier use" (*Ibid*, p.99). In Georgian times the term 'estate' was synonymous with 'street system', while "today it stands for its morphological antithesis" (*Ibid*, p.100). An overview of this transformation in Islington is presented in the following chapter.

Islington's Past & Present

The origins of Islington lie in the distant past; it was mentioned in the Domesday Book in the 11th Century and throughout medieval times its farms supplied the London market. The area became a popular rural resort for Londoners from the early 1700s and public houses with leisure facilities started clustering along the main roads together with some new housing related to these uses until a major building phase started, along with the construction of the Grand Union Canal, in the 1820s with the squares and terraces of Barnsbury. The form of Islington before this development can be seen in the picture below.

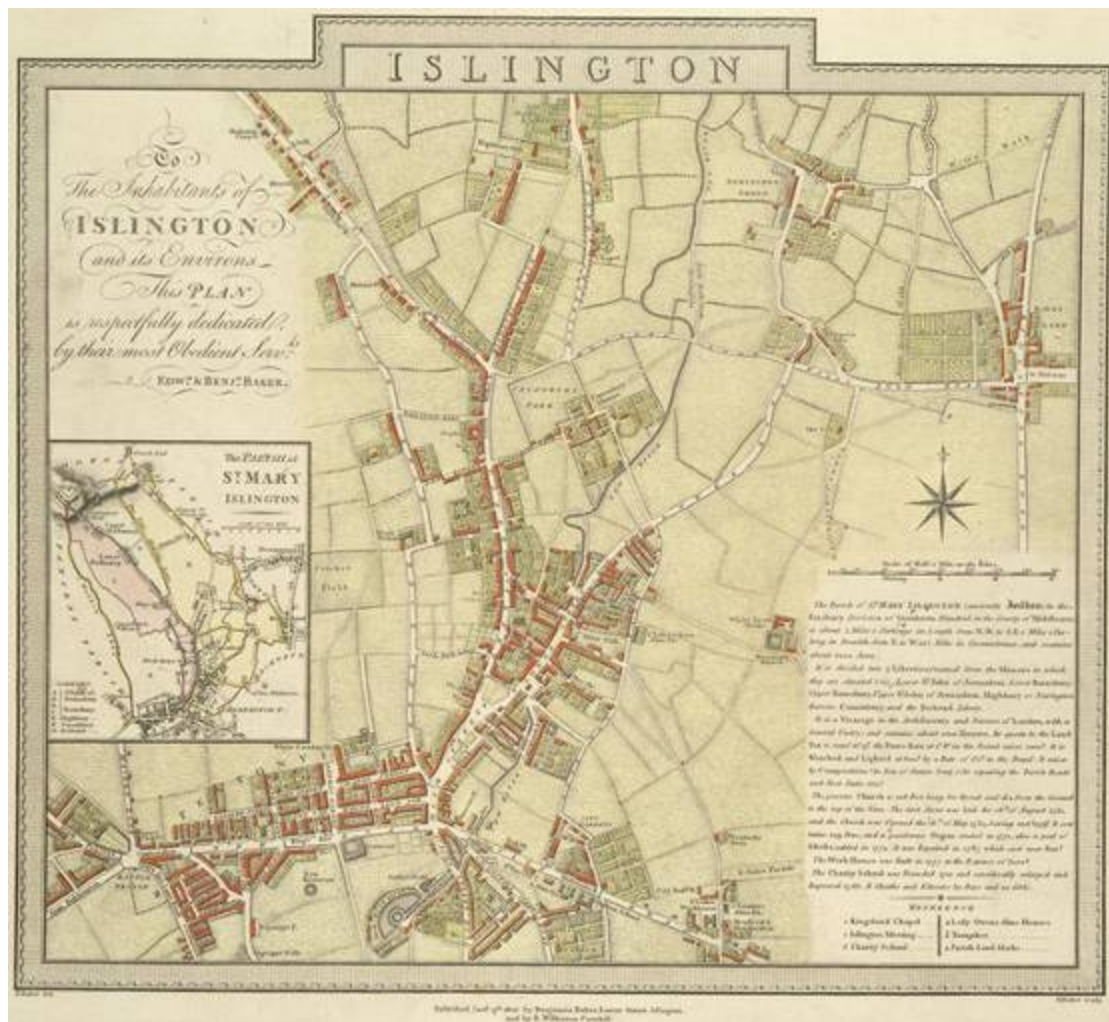


Fig. 5. 1805 map of Islington; source: Baker, E (1805).

The industrial development and the advent of the railways changed the face of Islington from a population of around 10,000 at the beginning of the 19th Century to around 320,000 at the end of the century. Much of this increase in population was made up of the poor displaced by slum clearances in Inner London coming to work on the development of the railway. These two combined factors reduced the area's attraction for the better off, who started moving further out into Middlesex, and led to a decline of the area which, after much damage to the housing stock caused by bombing in World War II, had become largely poor and run down by the 1950s.

The London Borough of Islington as it is nowadays was formed in 1965 through the merging of the former metropolitan boroughs of Islington and Finsbury as part of a London-wide reorganisation of the administrative areas. It was from the end of World War II into the 1970s that much municipal housing was developed throughout Islington on the bomb sites and on areas newly cleared of the worst terraced housing. Even in the 1960s much of the housing stock of Islington was in multi-occupation with many of the old terraced houses having outside WCs and no baths. This post-war rebuilding programme improved housing conditions and the local area in general, but many of the council estates erected through this period later developed social problems, including crime and vandalism. By the end of the 1970s, the economic basis of London had shifted from manufacturing to service industries and many middle-class families and professionals shifted back into London due to new, greater employment opportunities. They 'rediscovered' the Georgian terraces of Islington as efficient houses, which had historical value and were markedly different from the contemporary social housing, and therefore met the middle-classes' aspirational need to distinguish themselves from the working classes in terms of housing. This in turn led to the gentrification of many areas in Islington (a process that is still under way) and transformed these places once more into popular, trendy, and expensive residential areas. The housing history of many boroughs surrounding Central London is similar to that of Islington and has dramatically affected the housing market of the capital. Despite London's economic growth, large amounts of council and social housing remain in these areas and make Islington a highly polarised borough in terms of wealth and housing.

Generally, the level of polarisation in the housing market in the whole of Inner London is amplified by economic, political and social factors that have been developing since the late 1970s: the shift from manufacturing to service industries, the high levels of immigration to London, and the change in the housing tenure structure of London, shown in the figure below. The higher demand posed by the middle-class professionals working in the new industries has led not only to gentrification, but also to a polarisation between the home-owning professional and skilled working classes on the one hand, and social renting low-income, unemployed and economically inactive classes on the other (Hamnett, 2003, pp.10-13).

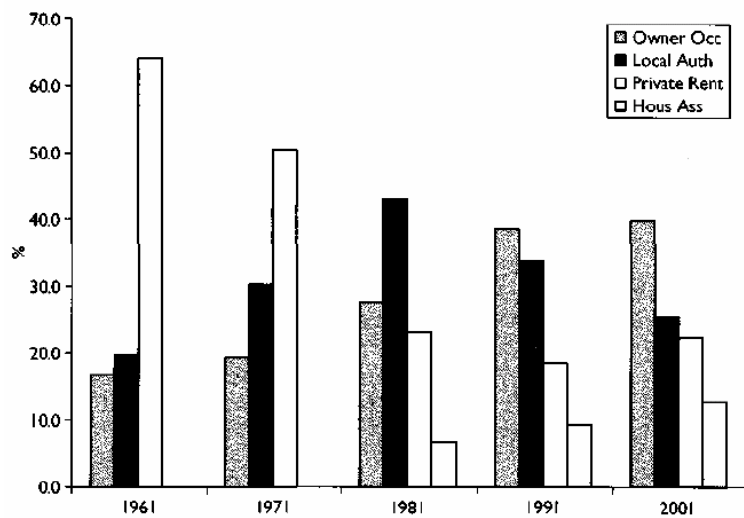


Fig. 6. Changes in the proportion of London's housing tenures. Source: Hamnett (2003, p. 136).

Research Methods

The methodological focus of this research is to devise a system to analyse the localised variations in the distribution of poverty within areas of Islington, which have different characteristics, both in terms of social make up and of housing forms. The methodology will provide a tool to gain insight into the nature of the areas' urban morphology and their housing, in a sense, into the residential environment as a whole, defined as the space and built form coupled together. This analysis will be contextualised within 2001 census data about employment and qualifications, as well as within a qualitative analysis of the areas', and Islington's characteristics and labour market.

Defining and assessing poverty is in itself a complex matter. Ideally, poverty would be classified according to income at the household level; however, these data are hard to gain at such detail due to their private nature. The Council only holds income data for households that receive some form of benefit, while the most comprehensive survey at the household level, the Census, is run by National Statistics, which only offers summary data on skills and employment for a minimum of 150 households and does not include data on household income. Although this is fine detail, it does not relate to any individual element or group of elements that has meaningful relationship to the built form, such as a building, a street or a block. In order to carry out this comparison a system was needed to perform an assessment of poverty; to summarise the data representing poverty to a detail not only comparable with that of Charles Booth's, but that could also be related to fine spatial properties of the urban form and physical properties of the housing forms. However, while it is possible to draw a picture of poverty through an assessment of benefits claims, which are stored by the Council at the household level for the whole of the borough, this is not so for qualifications and employment. In the scope of this research this part of the analysis cannot be carried out at the same fine street-block scale as urban and housing form. It was therefore briefly addressed at the level of the study areas analysed here, which are similar to the census' Lower Layer Output Areas (LLOAs). This part of the analysis is therefore more qualitative and looks at the wider scope of the labour market in Islington and London, while relating it to the spatial properties

and deprivation values of the study areas as a whole, rather than at any finer scale.

Summarising Poverty

In order to gain insight into the social make up, the distribution of poverty, and other variables that affect deprivation, summary maps and tables of data from UK Government summaries of statistics were analysed (www.neighbourhood.statistics.gov.uk). Various administrative areas were looked at and in particular the variables analysed were: the index of deprivation, the summaries of key benefits claims, as well as housing and council tax benefits claims.

For the purposes of mapping poverty in a summarised way that would compare to Charles Booth's data and match meaningful spatial elements, data at the household level were needed. As mentioned above these were not available for household income, therefore the author of this thesis decided to map the distribution of a number of benefits claims, which would indicate a general trend of the distribution of persistent poverty. Although Islington Council holds data for all claims by household, only housing and council tax benefits claims are compiled as separate datasets, while all other claims are clustered into one dataset with multiple entries for each single household. This latter dataset would have proved particularly hard to deal with, because it would have required an amount of processing to extract different datasets for each type of benefit, which was not viable in the scope of this research. Although all benefits could have been plotted into GIS software, this would have caused a problem in summarising the data because not all households are allowed to claim specific benefits, which may be related to health or household composition. It would have therefore been practically impossible to establish how many potential claims each household had rights to and draw a proportional summary of claimed benefits. On the contrary, housing and council tax benefits are means-tested and all households are allowed to claim them. Moreover, these benefits tend to be claimed on a long-term basis for a number of reasons: they are not normally related to a situation that is temporary, such as the presence of children or the elderly in the household,

illness or short-term disability, or even unemployment. Although they are related to the household's ability to create wealth, the shift from unemployment to employment of one or more members of a household may not supply enough wealth to provide for rent and council tax. This is particularly the case for unskilled and low-skilled workers, as well as those who are only able to gain part-time or hourly employment. There is also a reluctance by people on these benefits to shift into a type of employment which will stop their ability to claim them; mostly because of the fear of losing the 'safety net' provided by the welfare state, which would be hard to regain in case of loss of employment or another change in individual circumstances.

On this basis, housing and council tax benefits were used as a baseline to represent persistent poverty. However, there are shortcomings to using such a method that a researcher needs to be aware of; this is a very basic way of representing poverty and, somewhat intentionally, excludes households which may have shorter-term problems in sustaining themselves. It also excludes a number of groups because of regulations stopping them from claiming these benefits: most significantly overseas immigrants who have no rights to recur to public funds – this is the greatest shortcoming of using such data and, ideally, it should be complemented with an analysis of the presence of such groups in Islington and their means, but this would be beyond the scope of this research. People on benefits are allowed to get into education while continuing to claim, but full-time students, who are exempt from paying council tax, are not allowed to claim housing benefits (unless they have dependant children) and are again excluded from the picture of this research; however in mitigation their financial struggle is likely to be short-term. Finally, home-owners are not allowed to claim housing benefits; they are, however, able to claim council tax benefits and, if they are in financial difficulty, they are included in the dataset this way with a few exceptions: those who are struggling to repay their mortgage, despite help with council tax, and may be at risk of losing their home cannot be identified from the dataset, as well as people who own their home outright, but have difficulty with subsistence costs and are unwilling or unable to release equity from their home.

Around 75% of the records in the dataset were geo-referenced by Islington Council; of the remaining 25% those that were located within the study areas

were geo-referenced manually by the author. The data were plotted into MapInfo GIS software, and, as the households do not bear a unique reference number, it was not possible to join the two datasets in such a way that each record corresponded to each household with a value showing whether each was claiming either or both. The two datasets were therefore summed, rather than joined, resulting in each household being identified by none, one, or two records. In order to draw the proportion of the claims a dataset of all residential properties in Islington was necessary and this was provided by the Council in the form of a gazetteer of all properties. This needed to be cleared of properties which have uses other than residential: some were descriptively recorded in the gazetteer, but many were not and had to be identified and removed by recording different land-uses on site. This method bears some scope for error as some non-residential uses, such as small offices above shops or in other mostly residential buildings, or underground garages, may not be identifiable simply by observation. However, the author checked a range of buildings to ensure that the number of actual residential properties corresponded to the number in the gazetteer, by looking at flat numbers as reported on the Ordnance Survey (OS) landline or on the actual properties' bells; this was consistently found to be correct⁵.

At this stage 'Booth-like' blocks of residential properties were drawn in the GIS system to correspond with street segments⁶, literally each segment of each street from junction to junction. This is the smallest element of the urban form which can be treated as a separate object, measured and analysed with space syntax techniques, the use of which in this research is to analyse the urban morphology of the areas and is discussed below while the main definitions and measures are reported in Appendix I. By running queries in the GIS system, the number of properties in each block was retrieved and doubled to gain the number of potential claims (2 per household, 1 for housing benefit and 1 for council tax benefit), the number of claims was also retrieved

⁵ All purpose-built blocks, which have flat numbers reported in the OS landline were checked. 30 buildings per area comprising of terraced houses and mixed used blocks were checked on site, however, the scope for error remains greater for these types of housing.

⁶ The method used here for summarisation is different from that used by Booth. He summarised poverty along the street blocks in an 'organic' way, from gap to gap in the blocks or between blocks. Here the summarisation is linked to the specific spatial elements of the street segments. Although, these are similar to Booth's blocks and can be visually compared, they cannot be statistically compared because of the difference in methodology.

and thus the proportion of actual claims out of potential ones calculated. The block maps were then thematically coloured according to poverty bands from 0 claims, through three ranges from 1% to 49.9% claims, to two to last ranges, which are considered poor (50% to 70%) and very poor (70% to 100%)⁷.

The Morphological and Housing Form Analysis

In order to analyse the urban morphology of Islington and the study areas the axial map⁸ of London provided by Space Syntax Limited was used to construct two segment maps for this analysis. First, the axial map was cut down to cover the whole of Islington and to include a buffer area of around 3 Km, with the boundaries running along natural ones, such as major roads, railways, parks and the river. This was checked over the OS landline map to include all roads, streets and major pathways, refined and used for the borough-wide analysis. A second map was then created from this to include further detail of all minor footpaths and alleyways within and surrounding each study area in order to have the complete picture of the system of all open spaces that make up the morphological structure of each area. The axial maps were used to create the segment maps and these were processed with specialised software to calculate the space syntax measures⁹. The segments were then linked to the blocks through a unique reference number, and the two sets of data joined together in order to run statistical correlations (linear regression¹⁰) of the space syntax measures and the poverty levels. Many different measures were looked at and their significance will be discussed in the analysis in the following chapter. The relationship between the segments and the blocks was based on access to housing; thus the block would be

⁷ This is a somewhat arbitrary threshold for poverty, but useful to identify particularly problematic blocks on the basis that a block is to be considered poor if 50% or more of its households are in need of housing or council tax benefits, and very poor if less than a third is able to sustain themselves without these benefits.

⁸ The axial map is the basic tool of space syntax analysis and is constructed by drawing the fewest and longest lines of sight (axial lines) that cover the whole system of accessible open spaces.

⁹ The softwares used for analysis are MapInfo GIS and the space syntax extension tool *Confeego* designed by Space Syntax Limited for this system. DepthMap software, designed by Alistair Turner at UCL, was used to process and analyse segment maps. Microsoft Excel software and JMP software were used to perform statistical analysis.

¹⁰ This is a statistical technique for finding the best linear relationship between two numerical variables; it is a method of estimating the conditional expected value of one variable (poverty) given the values of some other variable (spatial measures).

related to the segment from which the dwellings are entered. This process was straight forward, except for a small number of cases where the housing blocks were entered from more than one segment. These could not be broken down any further due to the nature of the geo-referencing of the data (centred in the middle of the building object as drawn in the OS maps), which does not distinguish which dwellings or which claims belong to which part of the building.

Space syntax measures are influenced by small changes in the topological model that is their basis, and there is thus a need for consistency in modelling urban spaces in order for the measures to be correct and meaningful. The author was careful in maintaining consistency for two different modelling issues: firstly, the comparison with Victorian times, for which attention was paid to modelling areas that are shown to have retained the same morphology in both Charles Booth's maps and contemporary ones. Secondly, similar problematic spaces were modelled equally throughout the three study areas: gated accesses were excluded from the model because they are inaccessible to the public and fall into a particular category of housing which is relevant to spatial analysis and will be discussed further in the findings. Clearly marked private spaces were also not modelled unless they provided access to housing, in which case they were included, partly for the need to relate the blocks to their segment of access, and partly because the spaces are physically accessible to the public, whether this is a well-meaning neighbour or a potential burglar.

Finally, particular characteristics of housing form were recorded: the frontage of each building was coded and different space uses were analysed through the author's observation and photographic survey. These particular characteristics were chosen for two reasons: they are the characteristics that relate the housing to urban space through the interface that the buildings share with the outdoor spaces and through the types of spaces that connect the built forms, shape and define the urban form. Moreover, like certain space syntax measures, these characteristics were found to be indicative of specific social phenomena as well as variables of liveability, crime and fear of crime, and social sustainability (Hanson, 2000 and 2007; Chiaradia and Trigueiro, 2005; and previous submissions by this author).

In the scope of this research only the building frontage at ground level was recorded. Only the frontages that faced publicly or communally accessible spaces were plotted into GIS and coded according to the following: active frontage (red), includes all frontages bearing doors and windows whose land use is not residential¹¹; doors and windows (orange); doors only (yellow); windows only (blue); and blank walls (black). The detailed frontage analysis is reported in Appendix II, a detail of this from each area is given in the pictures below.



Figs 7-9. Detail of frontage analysis from each area, respectively 010B along a stretch of the Camden Road; 016B along a stretch of St Paul's Road; and 005A along a stretch of the Seven Sisters Road.

When analysing frontages, it is important to take into account how other boundaries in urban and housing form interact with these: fencing, both low and high, solid or see-through has a significant role in defining space and may change the way the building frontage interacts with the outdoors. Although it was not possible to record all fencing it was necessary when solid fencing was present, either by itself or covering the building frontage, and was included in the blank walls. This was done partly because under these circumstances the actual building frontage could not be recorded by observation and partly because blank walls were found to be related to problem areas in the studies mentioned in the paragraph above.

The proportion of different frontages in each area was then compared, analysed and related to the qualitative observation and photographic record of space uses, to then discuss their relationship to the distribution of poverty. Consistency in modelling the frontages is again a matter of importance

¹¹ The coding of active frontages is used here in a way that differs from that of Chiaradia and Trigueiro. 'Active' in space syntax literature is normally related to those land uses which 'multiply' pedestrian flows by attracting people to certain services, in particular retail and widely-used services, such as post offices. Here it stands to mean all non-residential uses and this was done in order to summarise land uses within frontages in the scope of this research. It is, however, important to remember that these, unlike shops, do not necessarily cause increased liveliness in the area as, for example, they maybe little used (industrial complexes) or closed at certain times of the year (schools).

methodologically as small changes can affect the picture of how the whole area is characterised. In particular, attention was paid to two problematic frontages: buildings with vertical access, which can be reached only by stepping into private space were recorded as having no doors at ground level; buildings with single, multiple access but lengthy frontages bearing mostly windows onto the public space were recorded as widows only, but include a small stretch of doors only, where the access is located; finally, fire exits, service doors, and back doors were not recorded as they do not function as normal access and exit ways¹².

The results from contextualising the areas and from the application of the above methodology are exposed from the borough-wide level to the study areas' detail and are explained in the following chapter.

¹² With the exception of three blocks in area 016B. These are a peculiar housing form: two poor blocks, which are laid out as a small block of 'inverted', back-to-back terraced houses, where the back doors of the solidly fenced back gardens form the perimeter of the blocks and function as the main access way to the housing; and the prosperous block of flats just south of St. Paul's Road. This has back doors designed in exactly the same way as front doors and, although they are located in a clearly marked private space, function as such for the residents and possibly close visitors

Findings

The Borough-wide Analysis

The 2001 Census reports that Islington now has a population of around 176,000 people and 82,000 households. It is less ethnically mixed (75.36% White population) than London on average (71.15%), unemployment is higher (5.80% as opposed to 4.36%), and general health is worse (10.78% of residents whose health is not good¹³ as opposed to 8.28%), while the proportion of tenures are dramatically different: 31% owner occupied and 49% Council, Housing Associations and RSLs as opposed to a London average of 56% for the former and 26% for the latter.

Neighbourhood Statistics reported 31,715 housing and/or council tax benefits claims in August 2005. The author was provided with a dataset of 30,692 housing benefits claims and 29,682 council tax claims; just over a 1000 of which were reported by the Council to be receiving only council tax benefit, but no housing benefit. The overall number of claims is therefore similar to that of 2005 and there has not been a dramatic increase or decrease since. However, this is a fairly high proportion of all households (38.6%), while the proportion of people in Islington claiming a key benefit is 22%.

As mentioned in the methodology, it was not possible to summarise and analyse the distribution of benefits at the street block level for the whole of the borough and therefore the picture reported by Neighbourhood Statistics was analysed at the study area level and highlighted in the picture below.

¹³ 'Good' and 'not good' health are used throughout this thesis as defined for 2001 census statistics.

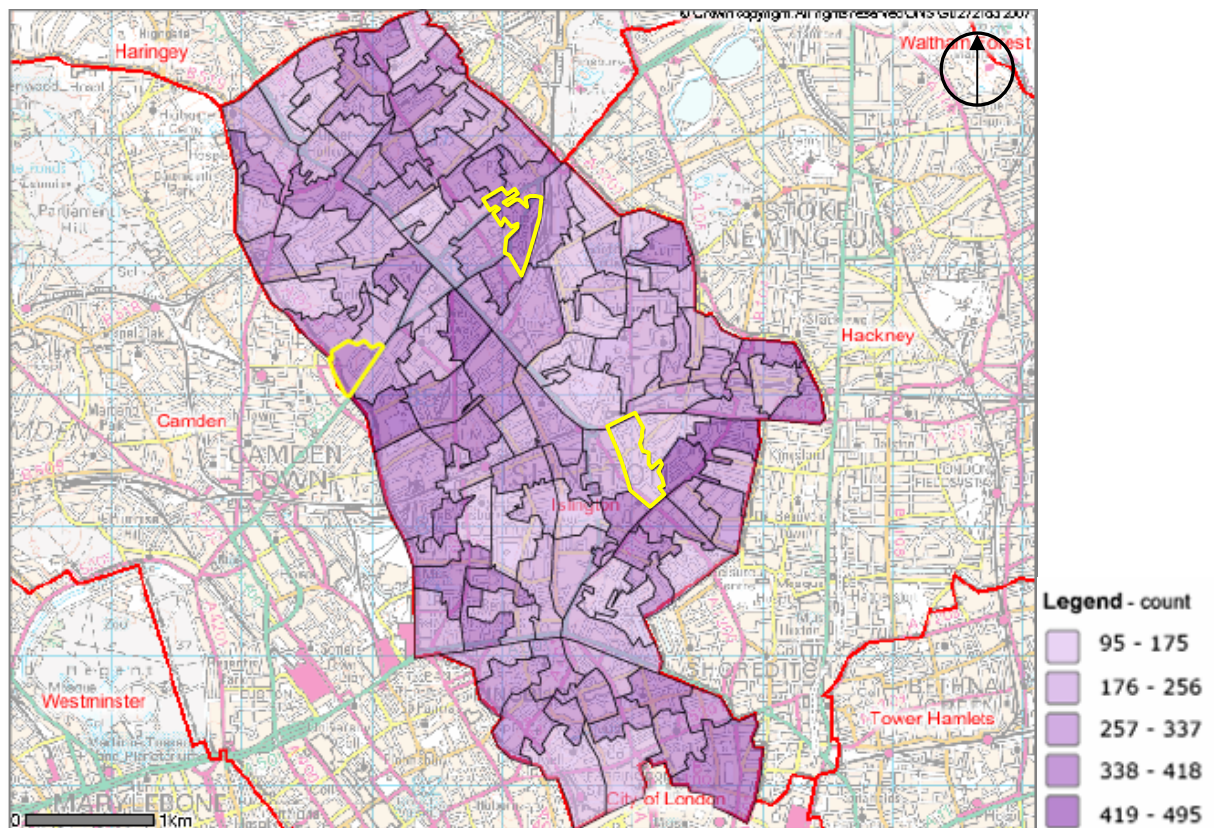


Fig. 10. Number of housing benefits and council tax benefits claimants by 2001 Census LLOAs (retrieved from <http://neighbourhood.statistics.gov.uk/dissemination>, last accessed 18 July 2007).

In order to analyse the urban morphology in relation to the distribution of poverty, the segment map of Islington was processed and an attempt was made at correlating the mean values of each LLOA with those indicating the number of housing and council tax benefits claims, the proportion of people claiming a key benefit, as well as the index of deprivation. The combined income indicator was not analysed because this is based on an index of key benefits claims, rather than actual income and therefore tends to be more representative of the distribution of an indicator of economic deprivation, rather than one of wealth, thus bearing information that is not very different from the distribution of benefits.

Many space syntax measures related to both the locality of each area and to how these are located and integrated into the wider network system of London were assessed. In particular the measures of *mean depth*¹⁴, *segment*

¹⁴ *Mean depth* is calculated by averaging the depth of each space within each possible justified graph of the spatial system.

*length*¹⁵, *global choice*¹⁶ and *choice*¹⁷ at different radii were looked at. None of the correlations were significant or even visually revealed any particular pattern of distribution. This does not necessarily mean that there is no association or relationship between these variables, but simply highlights the incompatibility of this type of spatial analysis with Census data summaries. This is because relationship between space syntax measures and social phenomena can only exist if these phenomena are related to natural characteristics of the built environment and can only be assessed if the data pertinent to them are summarised at the level of these natural elements. This is not the case for the Census' LLOAs, which are purely administrative boundaries that bear no relationship to significant elements of the urban form. The methodology used in this research was not be applicable at the borough level or did not prove satisfactory in revealing any information on the distribution of benefits that goes further than the Neighbourhood Statistics summaries. Ideally, to reveal any more significant information the process of summarisation at the street block level and correlation with the spatial values would be carried out for the whole of the borough¹⁸. Alternatively, the borough and the relevant data should be divided up and summarised according to areas which make spatial sense in terms of natural boundaries. This process was again beyond the scope and the resources of this research. However, the borough-wide spatial analysis is still a useful tool in understanding the structure and make up of different parts of Islington and is reported in the picture below, which clearly highlights the structure of major roads that cross Islington and shows the location of all London Underground stations within Islington (dotted in pink).

¹⁵ *Segment length* is simply a metric measure, which is useful in describing physical properties of space and in assessing the relationship between syntactic measures and other properties of space.

¹⁶ *Global choice* measures the number of shortest paths connecting each space to all other spaces in the system.

¹⁷ As per footnote 1.

¹⁸ This would either require substantial human resources to process the data or the creation of a system, which can automate the summarisation of the data and correlation between the variables.

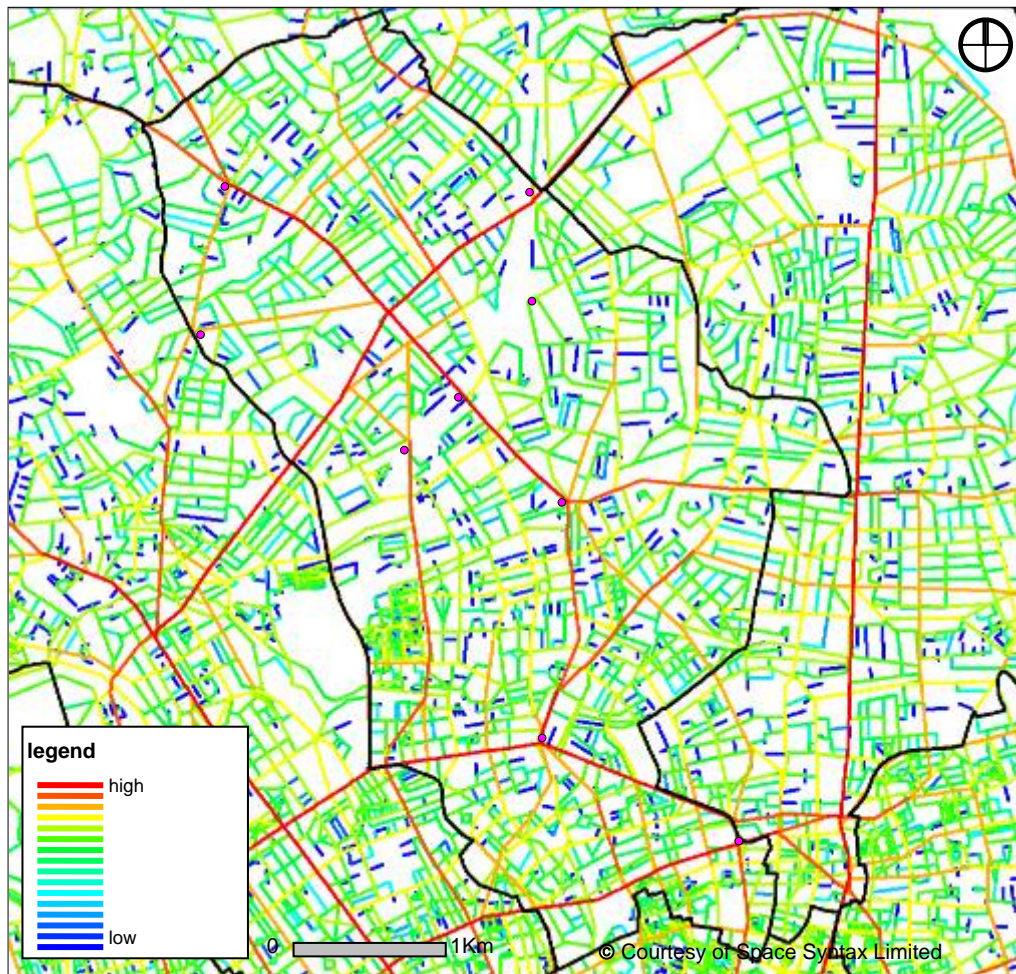


Fig. 11. Segment analysis of the London Borough of Islington, showing the measure of *global choice*.

Despite the process of gentrification described in the chapter on Islington's past and present, as well as the popularity of many areas of Islington (especially the southern wards, such as Clerkenwell) with the middle and upper-classes the borough overall remains fairly poor and ranked 6th in the index of deprivation scores from January 2004. However, while clusters of deprivation are present, especially in the south-east and north-east of the borough (as shown in the picture below, fig. 11) there are no significant clusters of poverty, meaning that (with one exception just to the east of the southernmost study area) there are no two adjacent areas falling within the highest number of claims range (fig. 10).

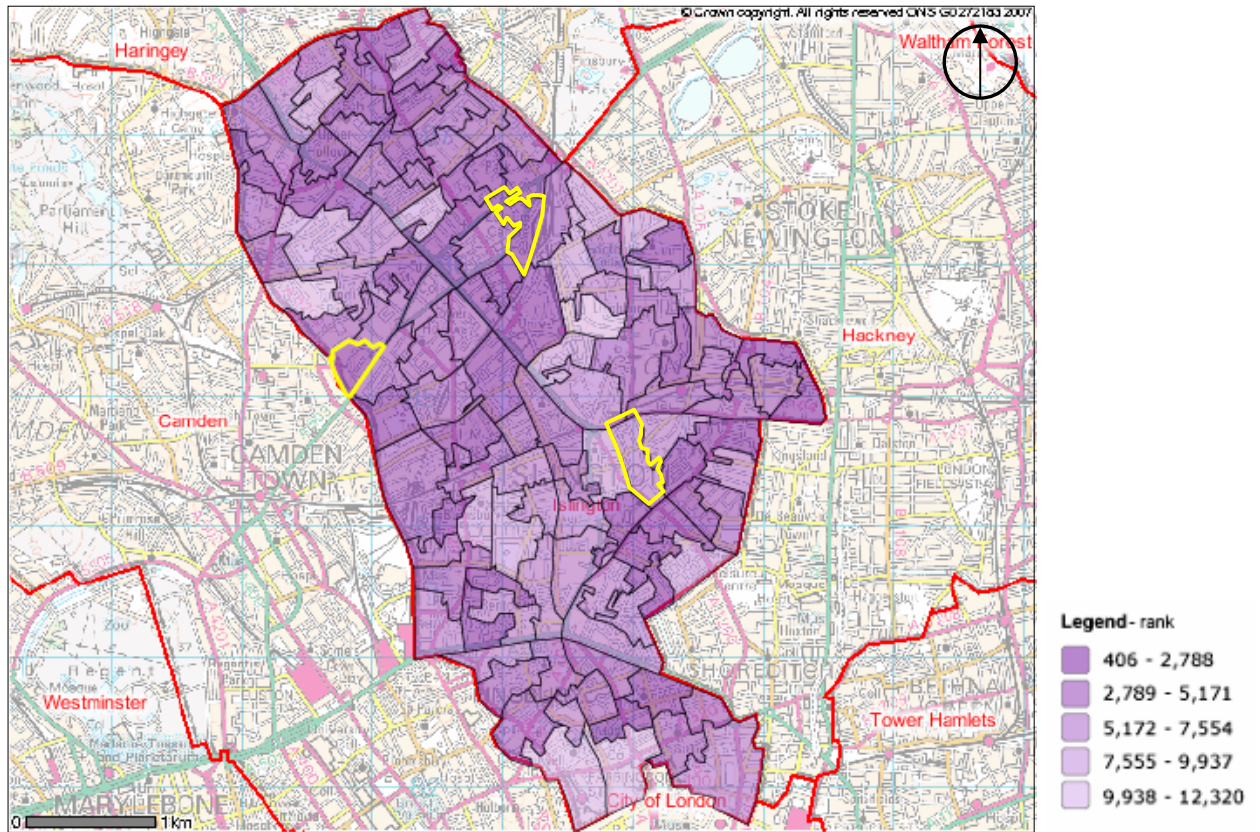


Fig. 12. Index of deprivation by 2001 Census Lower Layer Super Output Areas (retrieved from <http://neighbourhood.statistics.gov.uk/dissemination>, last accessed 18 July 2007).

The Sample Areas

The sample areas on which to apply the methodology were selected according to a number of criteria. The size of the LLOAs was chosen because at this level they include a variety of street types and urban elements: major and minor roads, a mix of land uses, a certain amount of public and green space, as well as different housing forms from different periods. This variety was needed to ensure that the objective of this research was met: to establish if there are any differences in the distribution of poverty according to different elements of the urban form.

As poverty is the focus of the study, two deprived areas with high numbers of benefits claims were selected for comparison, while a third, less deprived and with low numbers of claims was also included, in order to ensure that the analysis of the distribution of poverty would also be tested and valid within relatively rich areas.

Another criterion for selection was the difference in social make up of the three areas. This was to gain an insight into whether significant social variables play a part in the distribution of poverty and/or interact with spatial and housing variables in characterising deprivation areas. Based on the data reported by Neighbourhood Statistics the areas chosen were as follows:

LLOA 010B is located just north of the Camden Road and just east of the boundary line with Camden, along Brecknock Road. It has an ethnic mix which fits in with the average picture of Islington. It ranks 1707 in the deprivation index (fig. 11) which is around the middle of the lowest range and was claiming 385 housing and/or council tax benefits in August 2005. Low skills, unemployment, bad health and the amount of social housing are higher in this area than Islington's average.

LLOA 005A is found just to the west of Finsbury Park underground station and is 'split' into two areas north and south of the Seven Sisters Road. It is more ethnically mixed than Islington on average (60% white as opposed to 75%) and it is more deprived than 010B (it ranked 406 in January 2004 being the most deprived area in Islington) and there were 455 claims for housing and/or council tax benefits in August 2005. It has health and housing characteristics similar to 010B; however, despite the fact that low skills are higher than Islington's or London's average (but not national average), unemployment rates are no higher than for the rest of the borough.

Finally, LLOA 016B which is bounded by two major roads: St Paul's Road to the north and the Essex Road to the south; this area is also 'split' in two by the New River, which runs south-west/north-east through it. This area ranked 7143 in the deprivation index (the middle range); however, this score is influenced by the southern part of the area which comprises most of the social housing found in 016B and is located in the middle of a cluster of deprivation (fig. 11). In this area there were 160 claims for housing and/or council tax benefits in August 2005 and its ethnic make up is white-dominated. Health is better than Islington's average (although not London's), and, although the proportion of qualified people is high, unemployment is comparable with London's average, although lower than for the rest of Islington. All these basic statistics are reported in the table below.

		010B	005A	016B	LB Islington	London	England
All People							
Count	Population	1,541	1,488	1,483			
Persons							
Percentage	Ethnic Group						
	White	75	60	84	75	71	91
	Ethnic Group						
	Asian	5	11	3	5	12	5
	Ethnic Group						
	Black	14	21	7	12	11	2
	Ethnic Group						
	Other	6	8	6	8	6	2
	General Health						
	Good	62	63	72	68	71	69
	General Health						
	Not Good	14	15	9	11	8	9
	Economically Active						
	Unemployed	7	6	4	6	4	3
	Aged 16-74						
	No Qualifications	36	29	18	25	24	29
All Households							
Count	Households	758	675	748			
Households							
Percentage	Owner Occupied	20	21	50	31	56	68
	Council, HA or RSL	59	62	34	49	26	19
	Shared Ownership, Private Landlord and Other	21	17	16	20	18	13

Table 1. Summarised 2001 Census statistics derived from Neighbourhood Statistics (<http://www.neighbourhood.statistics.gov.uk/dissemination/>, last accessed 26 June 2007).

In order to analyse the areas spatially in relation to the distribution of poverty and to the above statistics, it was necessary to find a boundary, which matched natural characteristics of the built environment and also include the environment just outside the boundary, when this was present. The areas were thus enlarged, if needed, to include the major roads or other boundaries nearest to the administrative ones and, when this matched a road, the other side of it was included in the analysis. However, this process had to exclude the distribution of poverty for the other side of Brecknock Road, the western boundary of area 010B, as it is in Camden and benefits data were not available outside of Islington; it is important to bear in mind this shortcoming when looking at the analysis of 010B.

Spatial Analysis and Distribution of Benefits.

Following the summary of benefits data, some basic statistical and qualitative observations were run in order to gain an insight in the distribution of poverty within the study areas. As it was expected from analysing data from Neighbourhood Statistics, area 016B was shown to have the highest proportion of blocks, where no benefits were being claimed and was the only area with no blocks in the very poor range. Areas 010B and 005A have more similarities, with the great majority of the blocks having 30% or more of the households on either benefit. A striking difference between the two is the fact that more than 50% of blocks in area 010B fall into what were defined in the methodology as poor or very poor, while this is not so for area 005A. However, it must be noted that the latter has a substantial proportion of very poor households. These statistics are summarised in the table below:

	010B	016B	005A
No Claims	1.5	60.0	3.0
1% to 10%	3.5	13.0	3.0
10% to 20%	10.5	5.0	14.0
20% to 30%	9.0	5.0	15.0
30% to 50%	21.0	10.0	19.5
50% to 70 %	45.5	7.0	26.0
70% to 100%	9.0	0.0	19.5

Table 2. Proportion of blocks within different poverty ranges by area.

With regards to the spatial analysis of the street segments to which the blocks are related, the measure displayed in all spatial analysis maps presented below is *choice* at a radius of 3.6Km¹⁹. This particular measure was chosen for various reasons: firstly, it is the one which correlates best with the distribution of poverty and so will be the main focus of the analytical discussion presented after the findings. Secondly, measures of *choice* at different radii are representative of movement levels: for example it was shown in the borough analysis that *global choice* highlighted the main thoroughfares in Islington, especially vehicular roads. These, in Central London, are also likely to have high pedestrian movement flows, but the

¹⁹ The term *choice* is used from here on to mean at a radius of 3.6Km unless otherwise stated.

measure is more representative of vehicular movement because the radius is extremely large and therefore these routes are likely to be chosen by motorists as the shortest routes between far away areas. Smaller radii tend to highlight pedestrian routes, the shortest of which will be chosen only for length of journeys that can be undertaken on foot. A radius of 3.6Km is somewhat in between the two and it is reasonable that this is representative of route choices in an environment with a dense transport and road infrastructure, such as Inner London. Finally, this radius compares with the mean commuting distances for the lowest skilled as described by Green and Owen (2006) and discussed in the literature review (fig. 4). The use of this measure is therefore in line with the hypothesis that the ability to create wealth, and thus the distribution of poverty is related to the spatial ability to access resources to gain and use one's skills, which are distributed within a distance that is not solely related to the very local neighbourhood, but likely to be as far ranging as 3.6 Km. The segment analysis is related by area in more detail below.

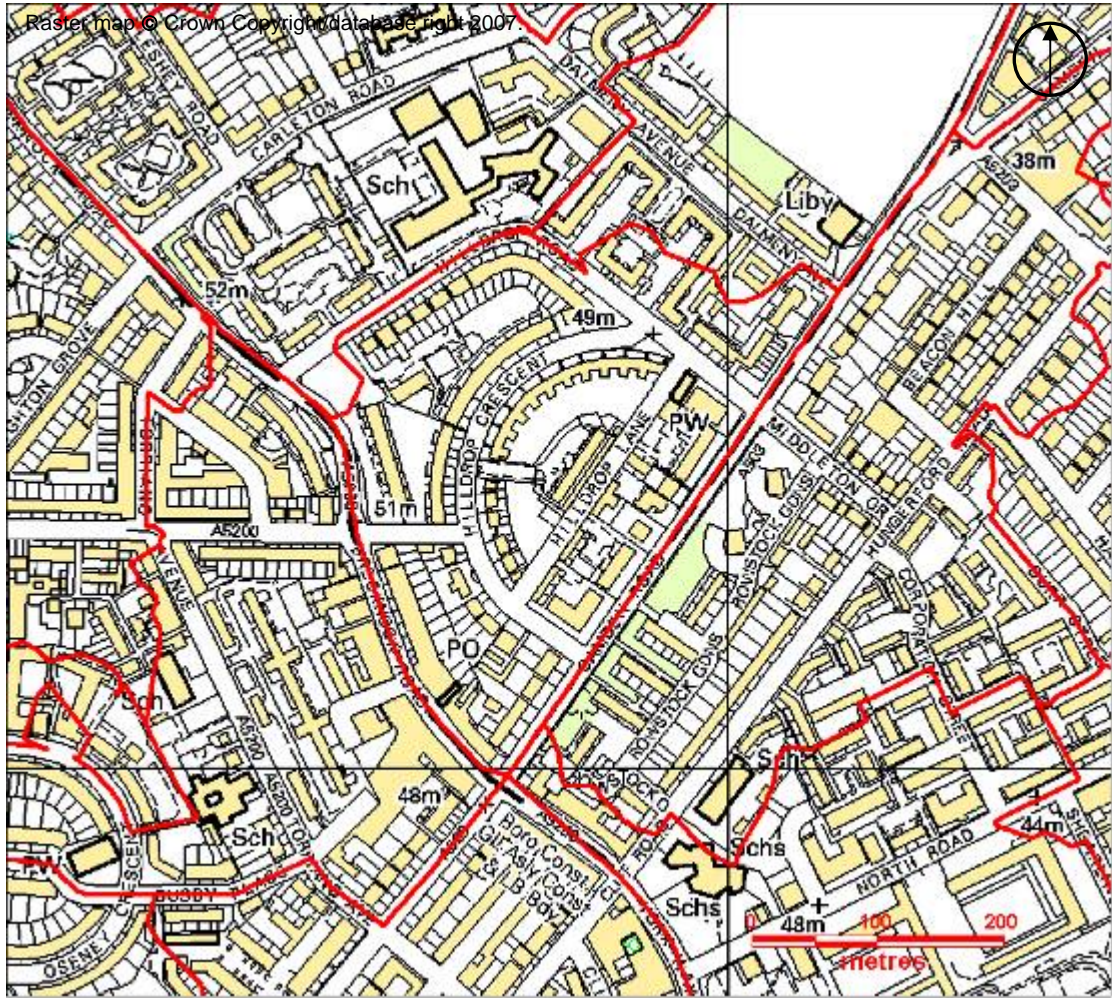


Fig. 13. Area 010B, showing the boundaries of the LLOA.

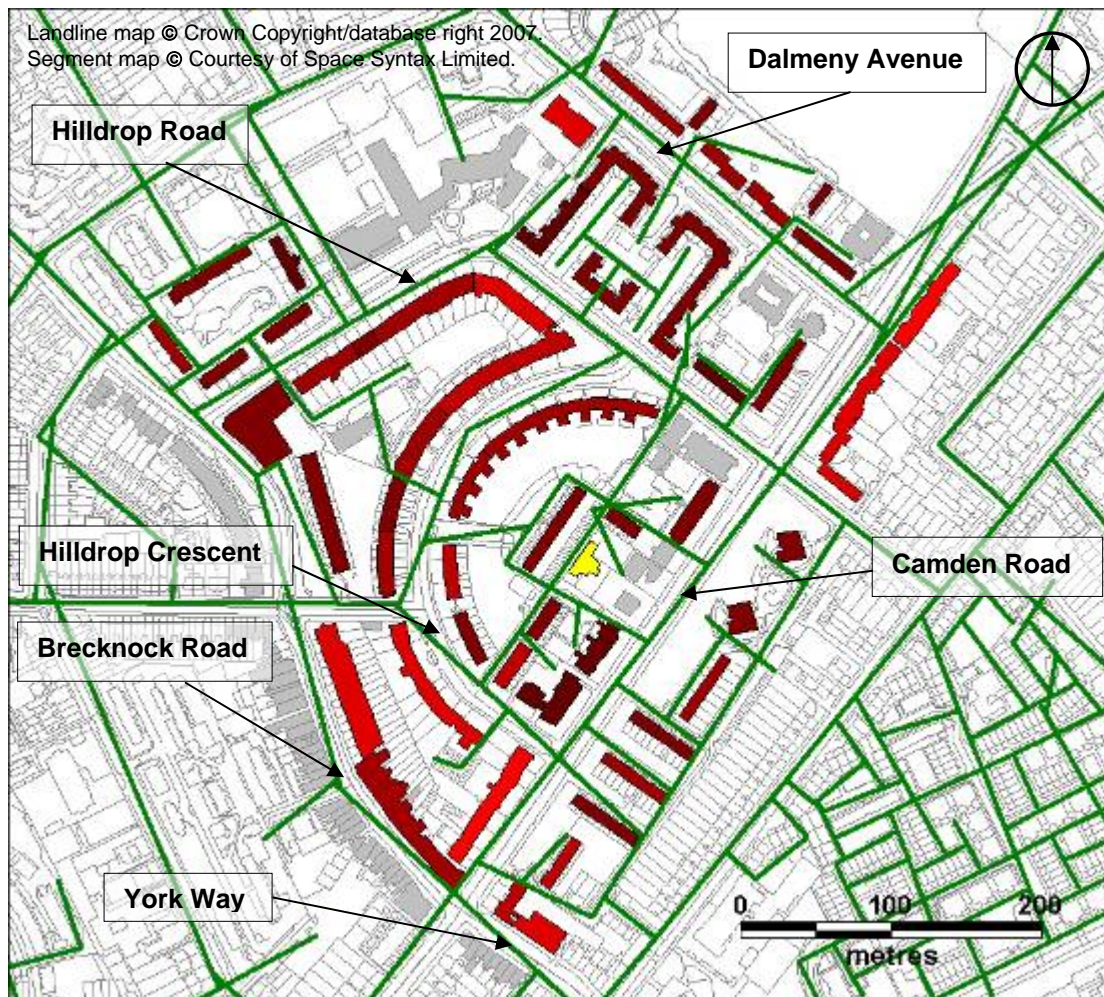


Fig. 14. Area 010B – Distribution of benefits claims showing the segment model of the area.

The distribution of poverty in this area shows a strong correspondence with the location of social housing²⁰. Large estates are found, along with the highest concentrations of poverty, on the Hilldrop Crescent, just north-west of the Camden Road; on the Upper Hilldrop Estate, the five slabs to the north-west of Hilldrop Road; all of the housing to the north-east of Hilldrop Road, except for the rectangular block at the top of Dalmeny Avenue; and the two tower blocks and five slabs, which are part of the Camden Estate, just south of the Camden Road. Much of the remaining housing comprises traditional terraced houses along the Hilldrop Road, Camden Road and Brecknock Road/York Way; the latter partly with ground floor shops. The striking oddity in the distribution is the small development in the middle of the Hilldrop Crescent, which is made up of only three properties. This is a very small number to derive a proportional value and does not allow for certainty in

²⁰ A dataset of this was again provided by the Council.

saying that this is a prosperous²¹ block. However, this does look like a small, fairly recent, private development, and the availability of a patch of land in a location near Central London, in a borough that is quickly being gentrified may be the cause of this 'oddity'. The spatial analysis of the area is shown in the picture below:

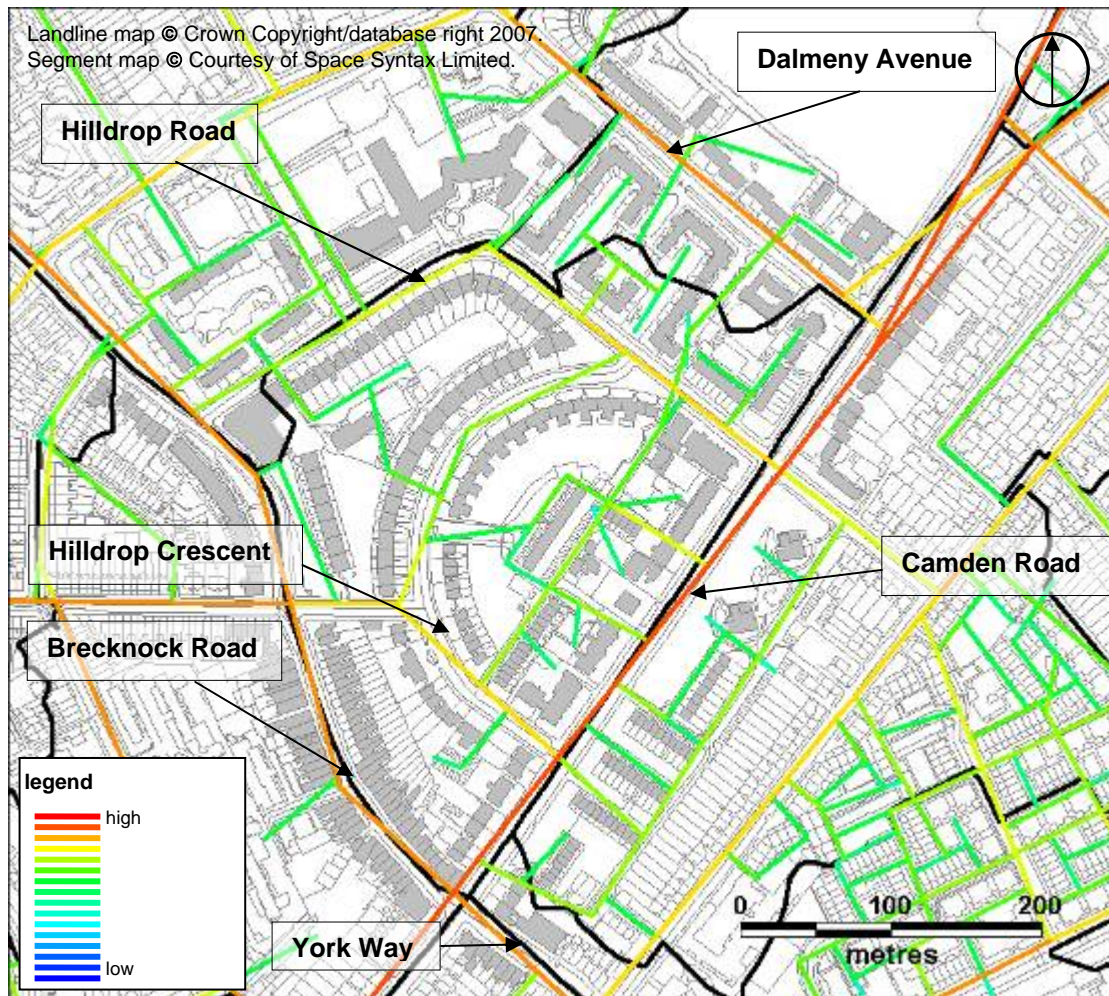


Fig. 15. Area 010B – Choice values.

From this analysis it can be easily seen that the most prosperous blocks are generally located along the segments with highest *choice*, such as Brecknock Road, York Way, and the Camden Road, as well as the south-west side of the Hilldrop Crescent. The poorer blocks on the Camden Road and along the north-east side of the Hilldrop Road are not actually accessed from the high-choice segments, but from the deeper circulation system that was created at the back

²¹ 'Prosperous' rather than 'rich' or 'wealthy', which cannot be stated based on this type of data, is used throughout this thesis to mean blocks which are in receipt of no benefits or of a low proportion of benefits.

of these roads in the middle of the blocks. However, the blocks along Dalmeny Avenue are an exception and their housing form will be looked at in more detail in analysis of their interface with the public domain of the area.

The statistical correlation between the measures of poverty and *choice* proved to be relatively high in this area, with a coefficient of 0.36 ($p < .0001$), and is shown in the graph below, which highlights that to a certain extent the higher the *choice* value, the lower the proportion of benefits claims.

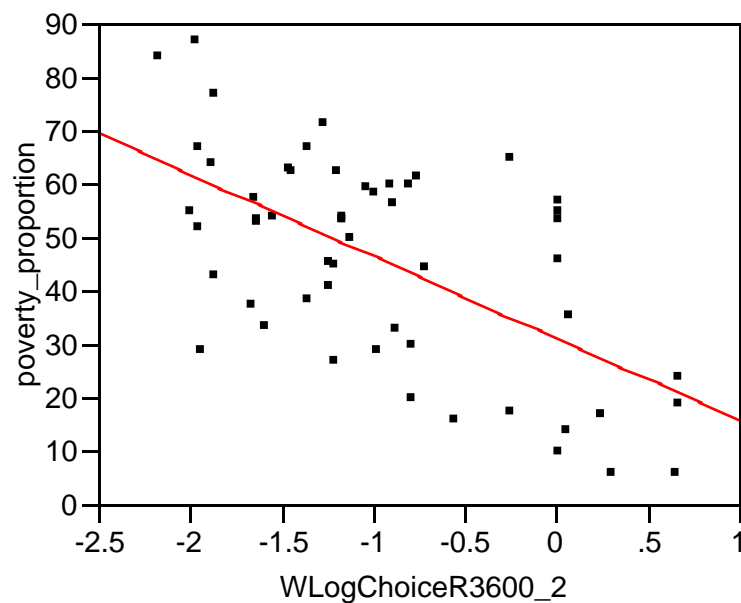


Fig. 16. Area 010B – Correlation between poverty values and *choice*.

The area has changed markedly since Charles Booth's times; the number of routes through it has increased, breaking up the large Victorian blocks and making the area more fragmented. The number of segments within the area has changed from 29 to 90 (an increase of 210%) and the mean segment length in the area has decreased from c. 88m to c. 39m (-55%).

Charles Booth's distribution of poverty and its spatial analysis are shown in the figures below.

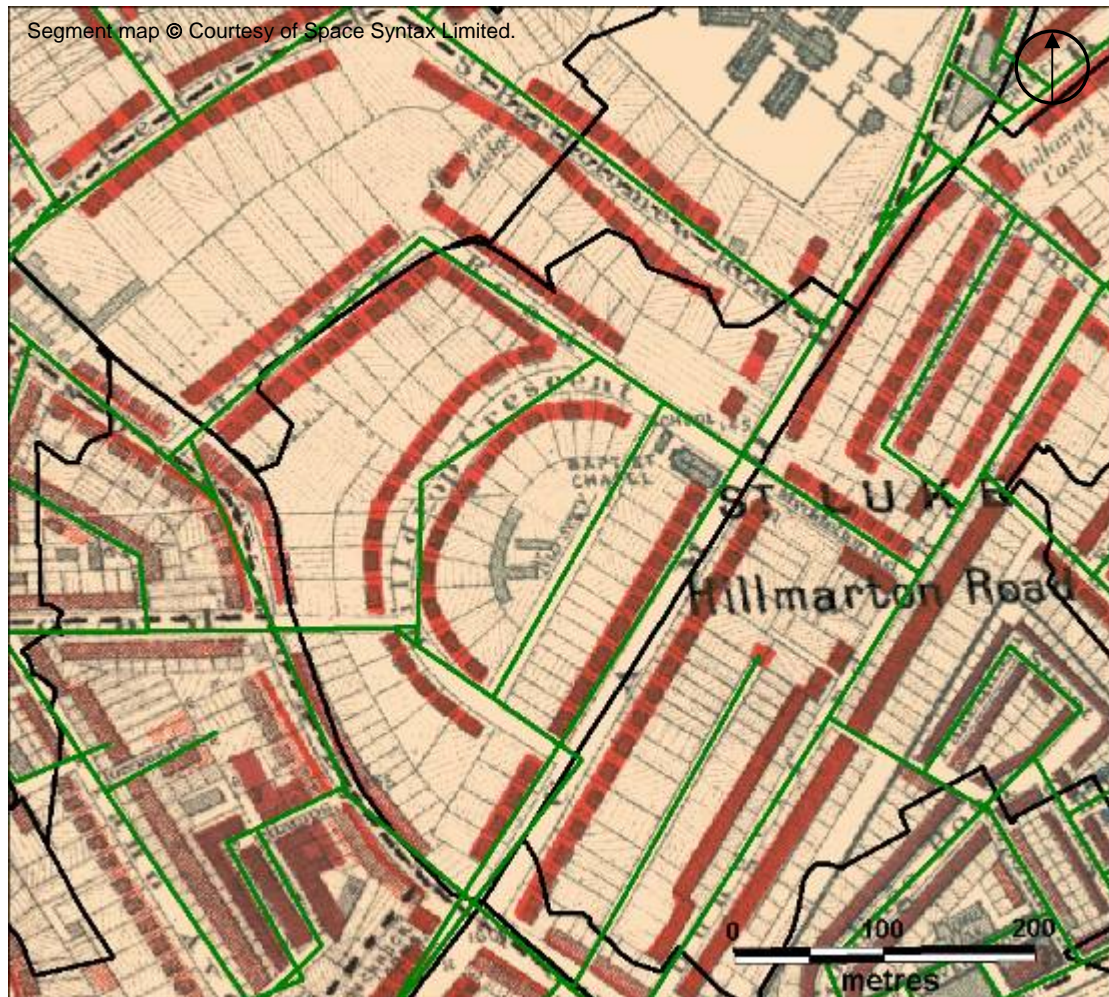


Fig. 17. Area 010B – Charles Booth's distribution of poverty showing the segment model of the area.
Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

Charles Booth's survey shows that the area was evenly a 'middle-class, well-to-do' area, with slightly lower classes (the 'fairly comfortable') along York Way and Brecknock Road. The housing is made up of large blocks of back-to-back terraced houses, which dominate and structure the street system. Communal outdoor space is minimal as this is taken up by private gardens, the backs of which are rarely run through by pathways.

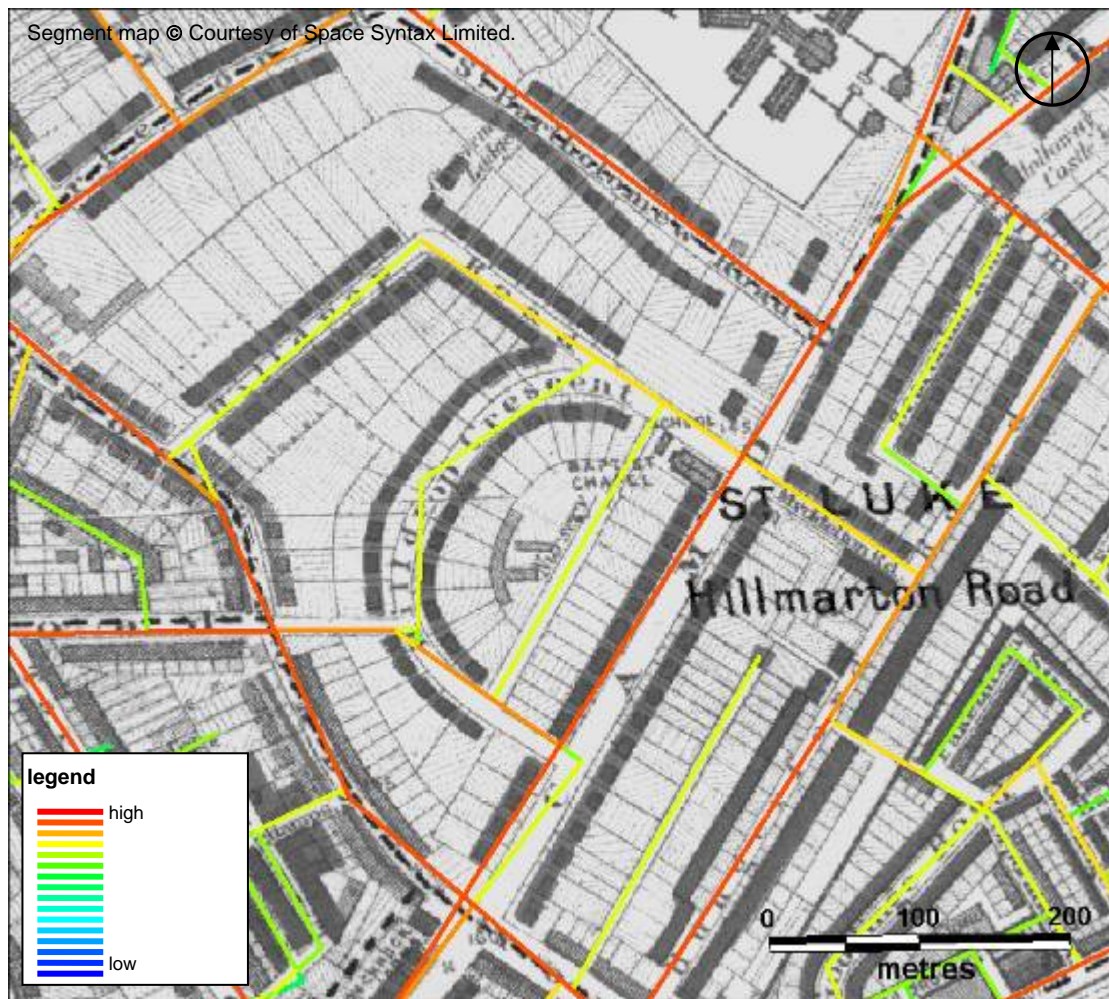


Fig. 18. Area 010B – Choice values of 1899.
Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

The colour ranges used for the *choice* values shown above are the same as for modern times and this shows that the area had overall higher values than it does now (mean choice of -1.03 in 2007 as opposed to -0.61 in Victorian times)²². However, although the middle classes still ‘take up’ the highest-*choice* segments on the Camden Road, the lower classes are found along high *choice* segments, which form a major route along York Way and Brecknock Road, rather than ones with a lower *choice* value. This is possibly related to the fact that this major route also shapes the boundary of two more deprived and more fragmented areas: one to the west of Brecknock Road and the other east of York Way, where the Hyde Village estate is now found.

²² The choice values are negative throughout this thesis. This is because the actual number of shortest path has been logged to shorten the range of values for display and statistical purposes.

The analysis of area 016B, in the figures below, shows a somewhat different picture.

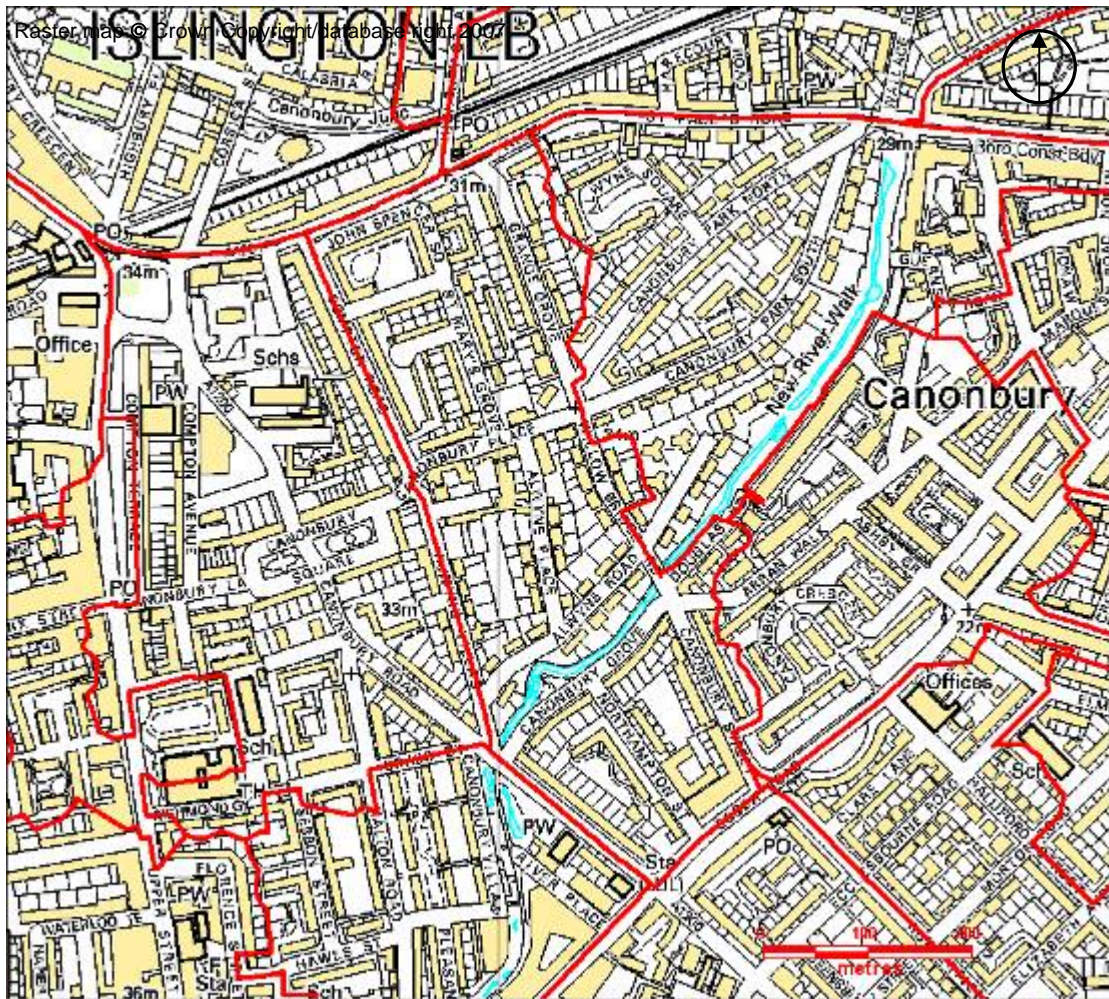


Fig. 19. Area 016B, showing the boundaries of the LLOA.

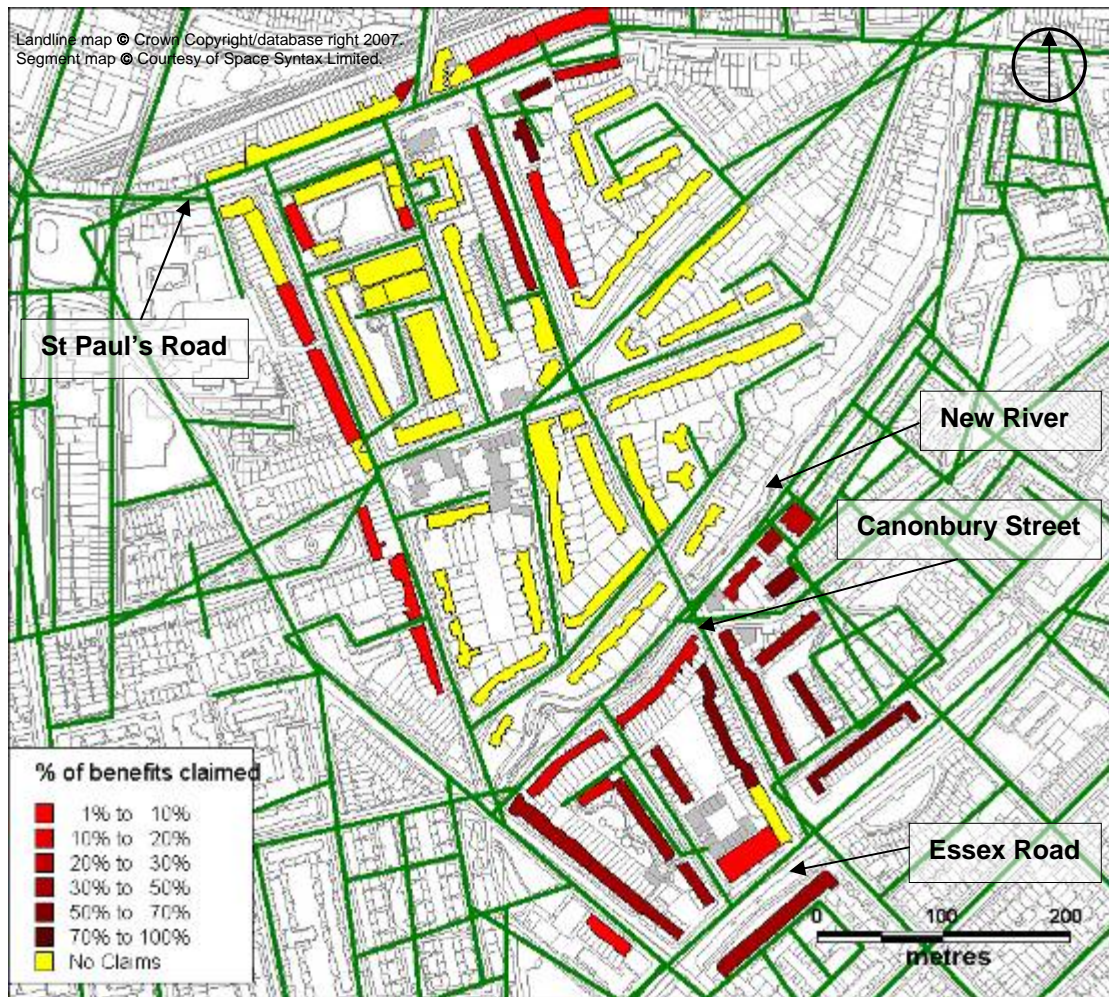


Fig. 20. Area 016B – Distribution of benefits claims showing the segment model of the area.

The distribution of benefits shows that the poorest blocks are located in the southern part of the area, between the New River and the Essex Road. The only two poor blocks in the northern half of the site are associated with social housing, while the blocks in the lowest range of claims have extremely low proportions of claims, nearer to the 1% than to the 10%, and often caused by a single council tax benefit claim. Many of the poor blocks in the southern area are also associated with social housing, especially to the east of Canonbury Street. Much of the housing in the area is traditional terraced houses, which are accessed from main streets rather than from pathways deeper into the blocks as they often are in area 010B.

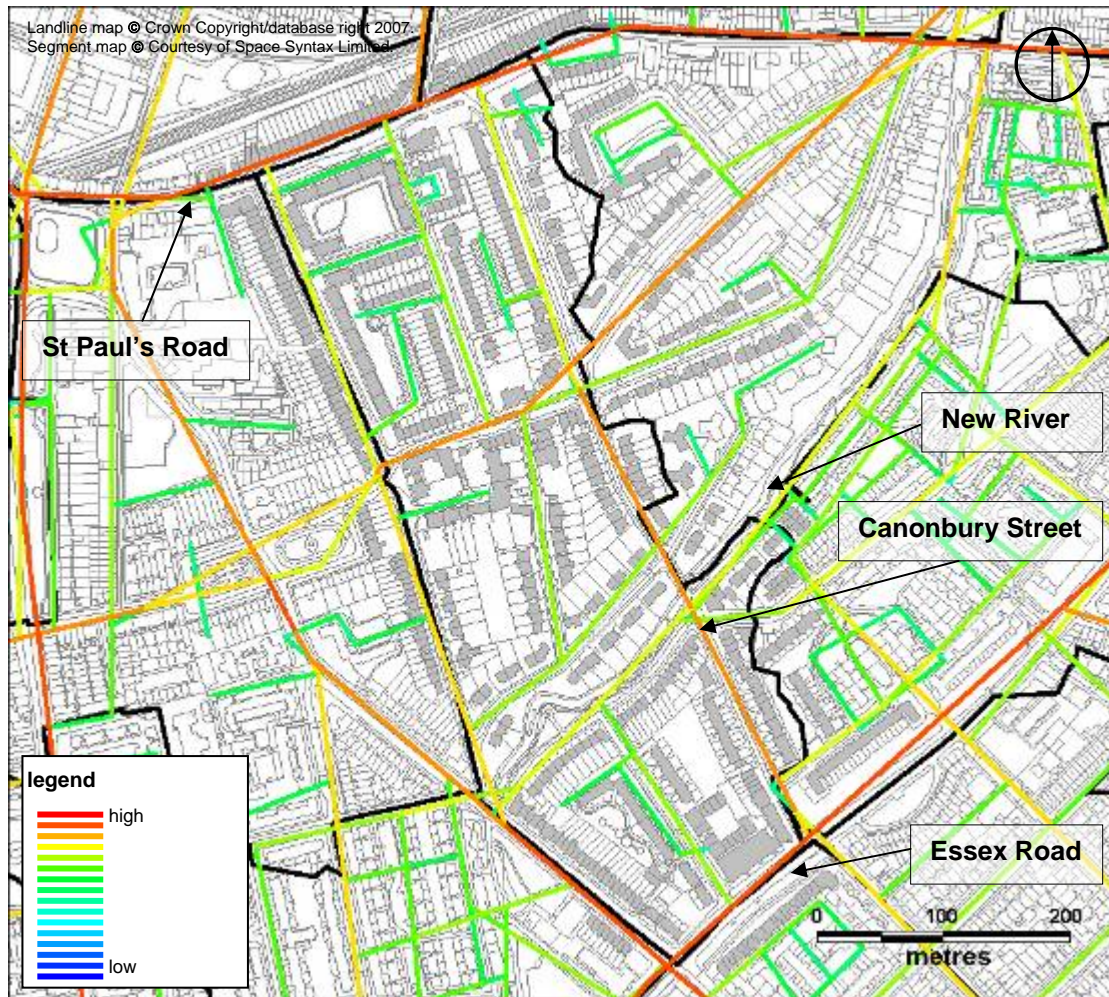


Fig. 21. Area 016B – Choice values.

The spatial analysis shows that the area is bordered, as well as crossed, by routes which have a high *choice* value, and overall within the area the values remain higher than in 010B (-0.92 as opposed to -1.03). However, it is to be noticed that the distribution in relation to the spatial values is different: here some of the poorest blocks are accessed from segments with low *choice* values, but so are some of the prosperous blocks. There is no relationship between the two measures of poverty and *choice* – as the correlation with a coefficient of 0.01 ($p > .3473$) shows in the graph below. One note needs to be made here: the author observed that many of the low-*choice* segments that give access to prosperous blocks were clearly demarcated as private property, unlike those which gave access to poor blocks. This issue will be touched upon further in the analytical discussion.

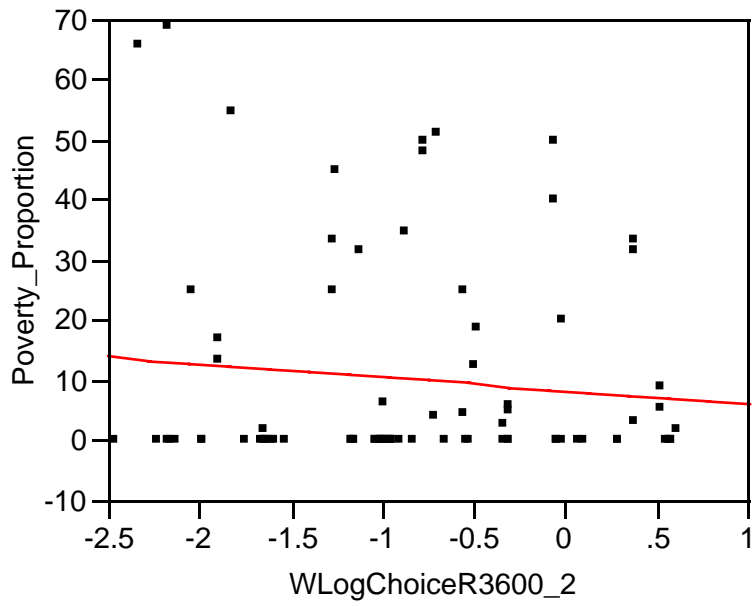


Fig. 22. Area 016B – Correlation between poverty values and *choice*.

The area has remained substantially similar to how it was at the end of the 19th Century: the number of segments has increased from 92 to 111, while the mean segment length has decreased from c. 49m to c. 42m. However, the difference is markedly less than that of area 010B.

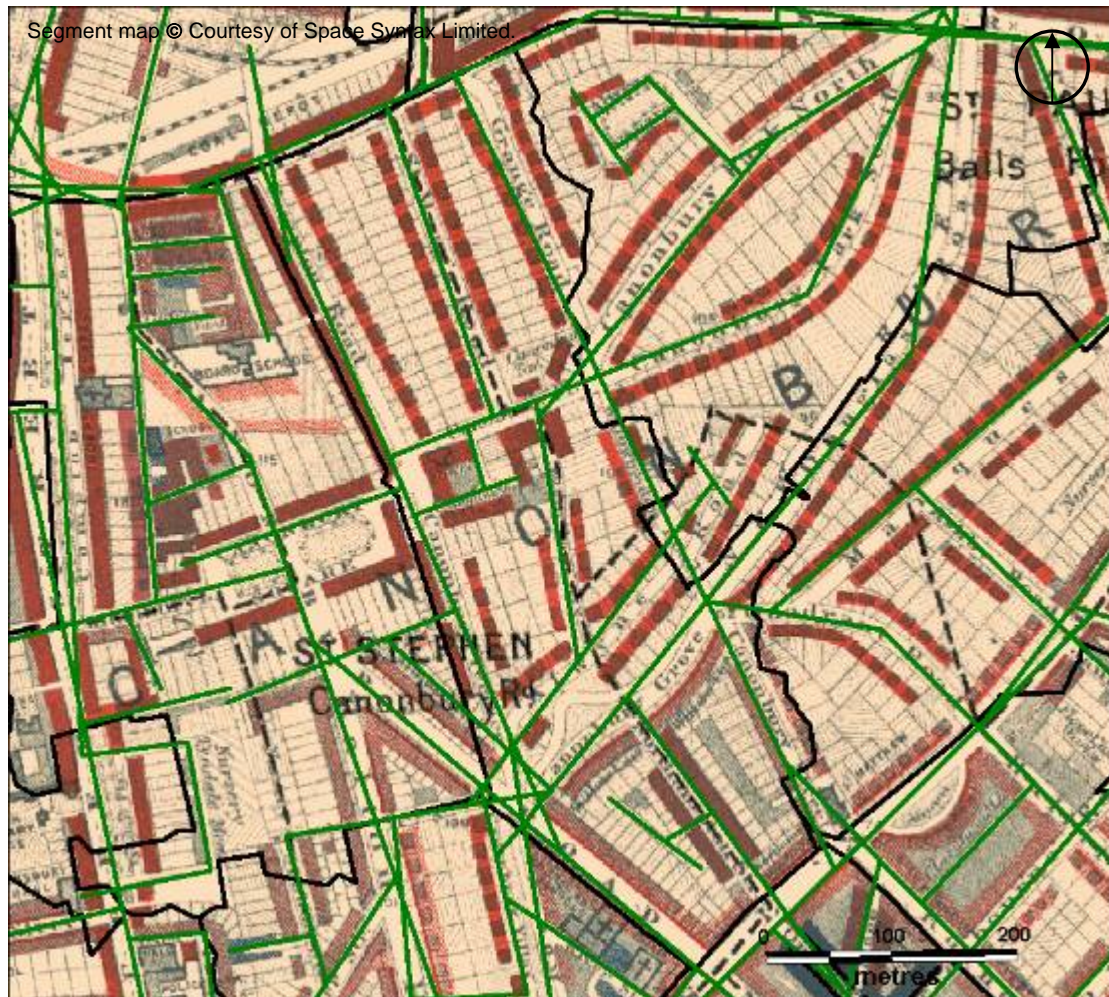


Fig. 23. Area 016B – Charles Booth's distribution of poverty showing the segment model of the area.
Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

The area's make up was similar to that of 010B: it comprised mostly middle-classes, with some 'fairly comfortable' and few mixed blocks. However, the area's hierarchy has not changed, with the lower classes relegated to the blocks south of the New River, which, like in modern times, are embedded on all other sides in more significantly deprived areas.



Fig. 24. Area 016B – Choice values of 1899.
Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

As for area 010B, *choice* values are generally higher than in modern times (-0.39 As opposed to -0.92), but the structure of the residential layouts has remained quite similar. This area has been subject to much less post-war redevelopment than the other two and Modernist housing is almost absent, except for the area to the east of Canonbury Road, which has changed dramatically, has become more fragmented, and comprises the poorer blocks found here (figs. 20 and 21).

The third area, further north, in what used to be the Metropolitan Borough of Finsbury, is more varied in terms of social make up, housing, and distribution of poverty. It is shown in the figures below.

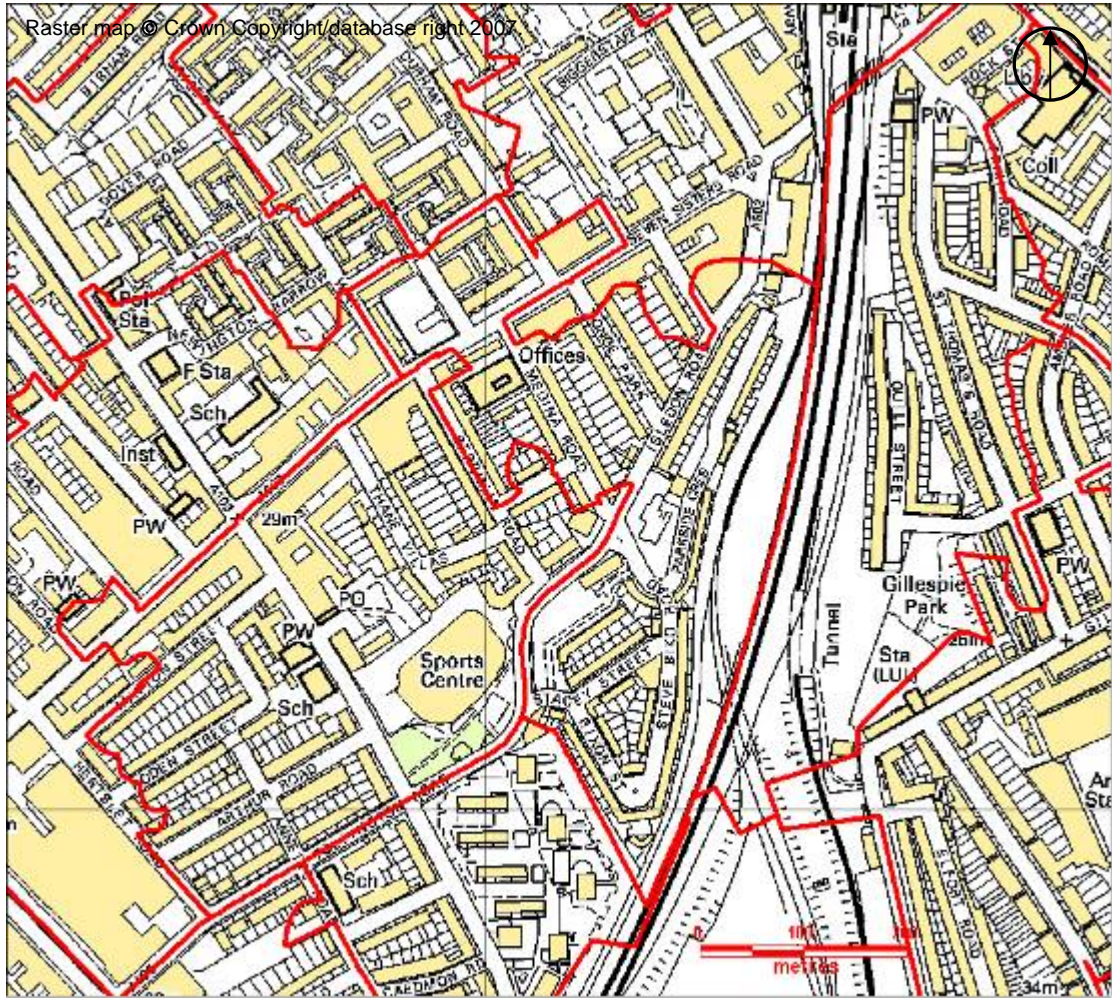


Fig. 25. Area 005A, showing the boundaries of the LLOA.

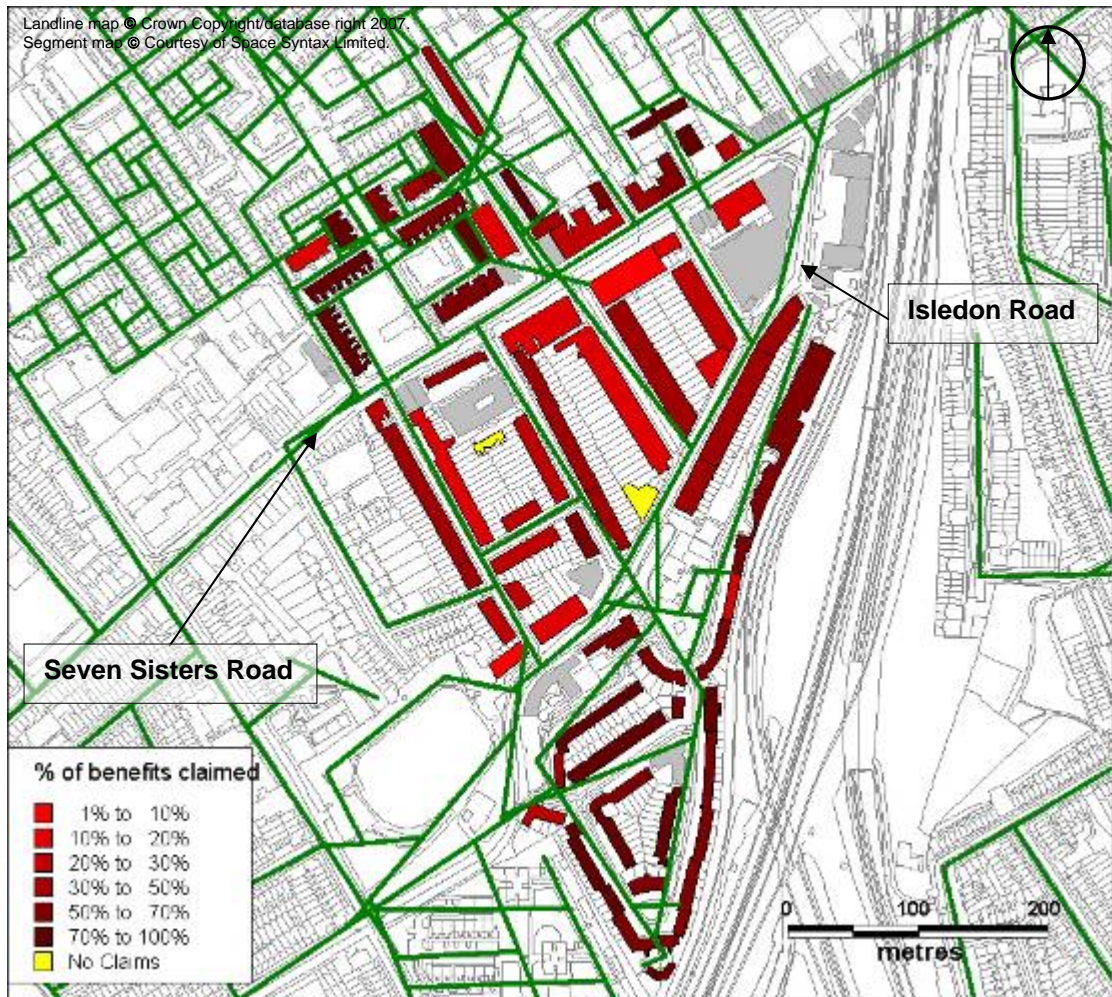


Fig. 26. Area 005A – Distribution of benefits claims showing the segment model of the area.

The distribution of poverty shows that the area is divided up into three bands of poverty proportions: a very poor area made up of blocks found to the north of the Seven Sisters Road, which belong to the Modernist Andover estate. A second poor area, in the south-east part of the site, located between the railway and Isledon Road, which is largely made up of a postmodern social housing estate built in the early 1990s. Finally, a more mixed area between the two, bounded by the Seven Sisters Road to the north-west and Isledon Road to the south-east, which comprises mostly traditional terraced housing along with many 'over-the-shop' flats along the Seven Sisters Road. The two prosperous blocks are made up of a small number of properties, and the same issues as for the prosperous block in area 010B arise. However, the properties in the middle of the block, along the south-eastern side of a large non-residential block (the Job Centre), is a gated development, thus not

related to any segment and excluded from the model, shown below. This may again be a symptom of gentrification and the issue of complete urban segregation, of having access to one's housing on a segment that is not publicly accessible, will be considered further in the analytical discussion.

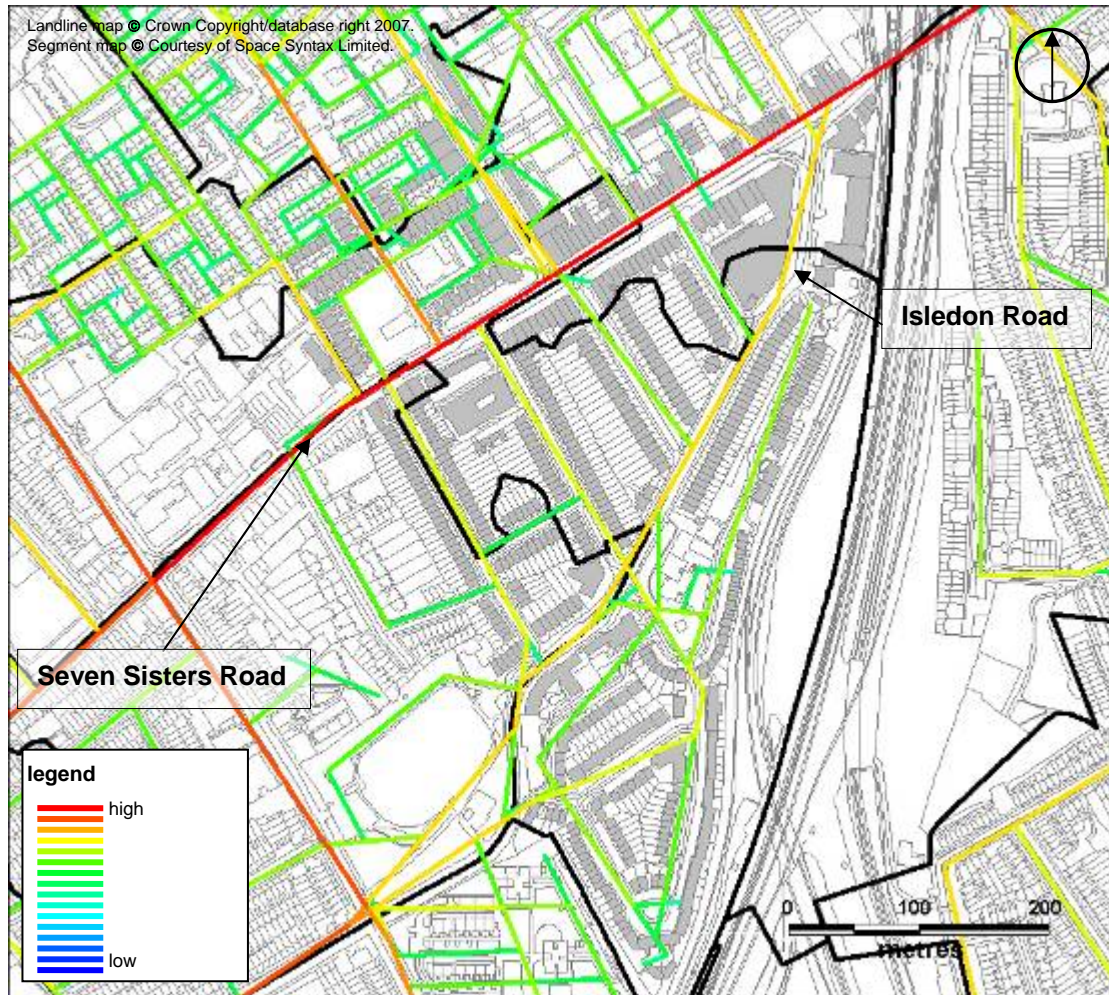


Fig. 27. Area 005A – Choice values.

Here, as in area 010B, it is noticeable that most of the poor and very poor blocks are entered from segments which have low *choice*, including those along the northern side of the Seven Sisters Road, which are accessed from the pathways deeper into the circulation system rather than from the major road itself. However, the correlation between the two measures, with a coefficient of 0.20 ($p < .0001$), is not as strong here as it is for 010B.

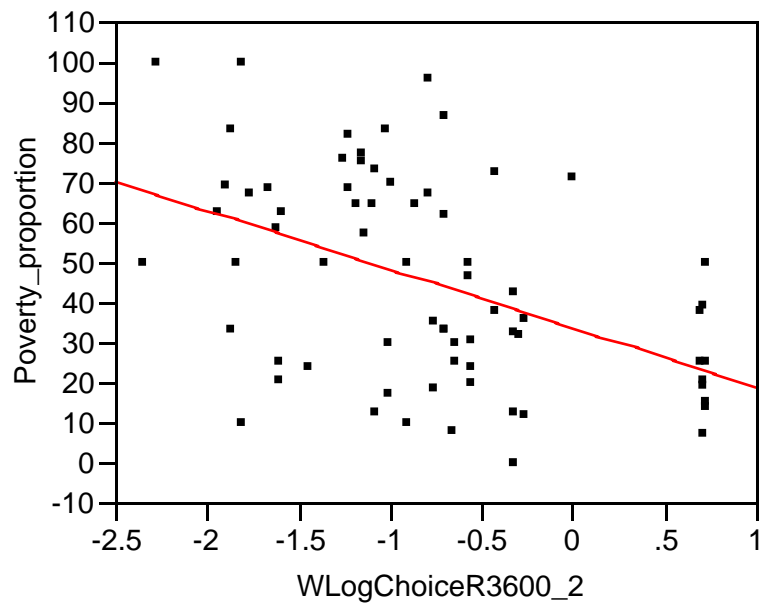


Fig. 28. Area 005A – Correlation between poverty values and *choice*.

This lower R^2 value is possibly due to the fact that here social housing is clustered together into two areas and separated by traditional blocks of private housing, unlike in area 010B, where different tenures are more interspersed throughout.

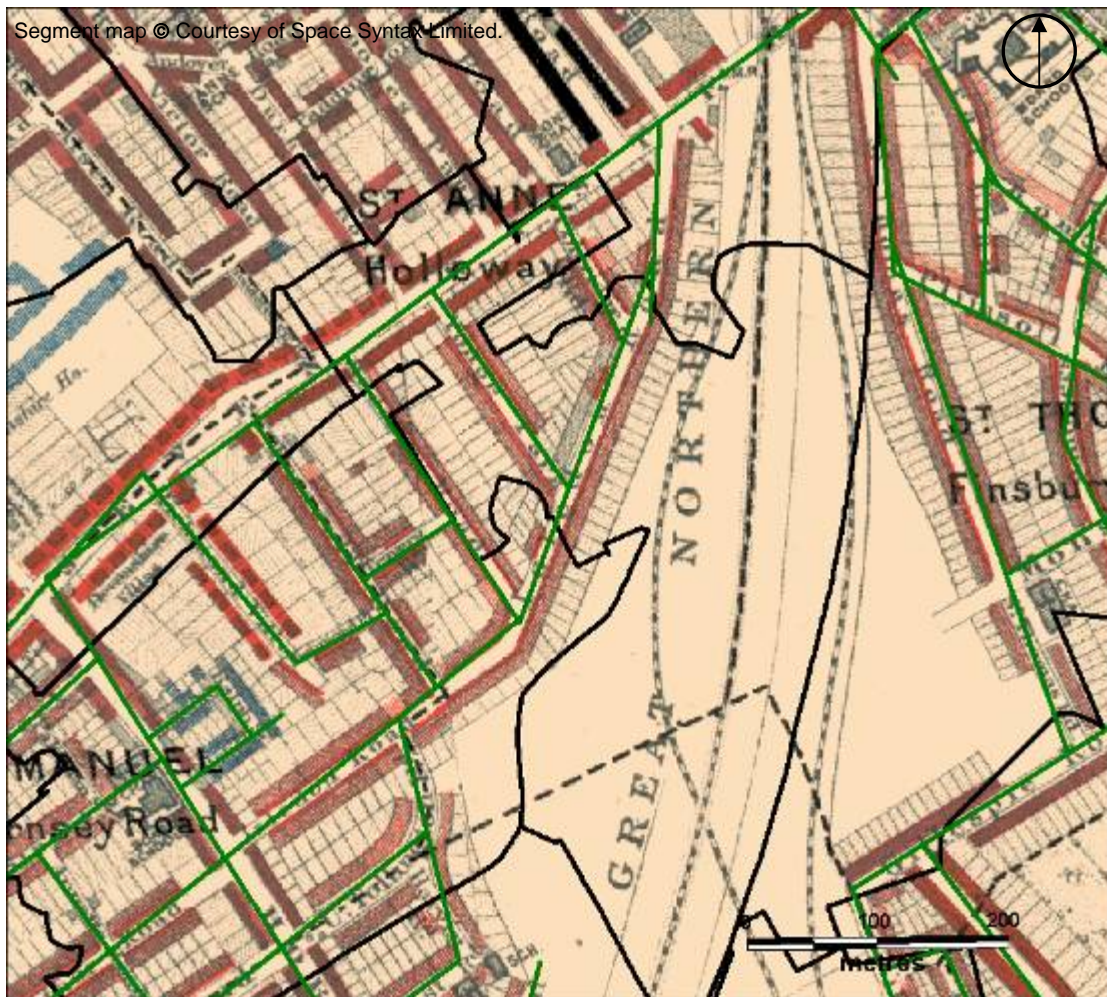


Fig. 29. Area 016B – Charles Booth's distribution of poverty showing the segment model of the area. Charles Booth map - courtesy of Dr. Laura Vaughan, LSE and EPSRC.

The area retains interesting similarities with Victorian times: the traditional blocks in the central part of the site belong to the 'fairly comfortable' classes, with the middle-classes found along the Seven Sisters Road and, to the north of this, an area of smaller more fragmented blocks, comprising mixed blocks and the lower-classes. Much of the site was not developed at that time and a comparison between the spatial properties and values of the area would not be significant in revealing how the area has changed overtime²³.

The analysis below relates the above findings to the housing forms which interact with the urban space to shape the environment of the study areas.

²³ The spatial measures are not shown for this area also because it is an edge area in the spatial model and the values would be meaningless without a wide buffer area to the north, which was not possible to model as the Charles Booth's only covers a small area to the north of this. It was not possible in the scope of this research to use the historical OS landline of the same era in order to derive a buffer area and overlap the model with Charles Booth's map.

Housing and Interface

The study of the housing forms present in these areas in terms of their interface and how they relate to the outdoor space through their frontage, revealed interesting characteristics of the areas, which differentiate them in terms of how their housing is related to the urban form. The proportion of different frontages in the areas is presented and compared in the graphs and table below.

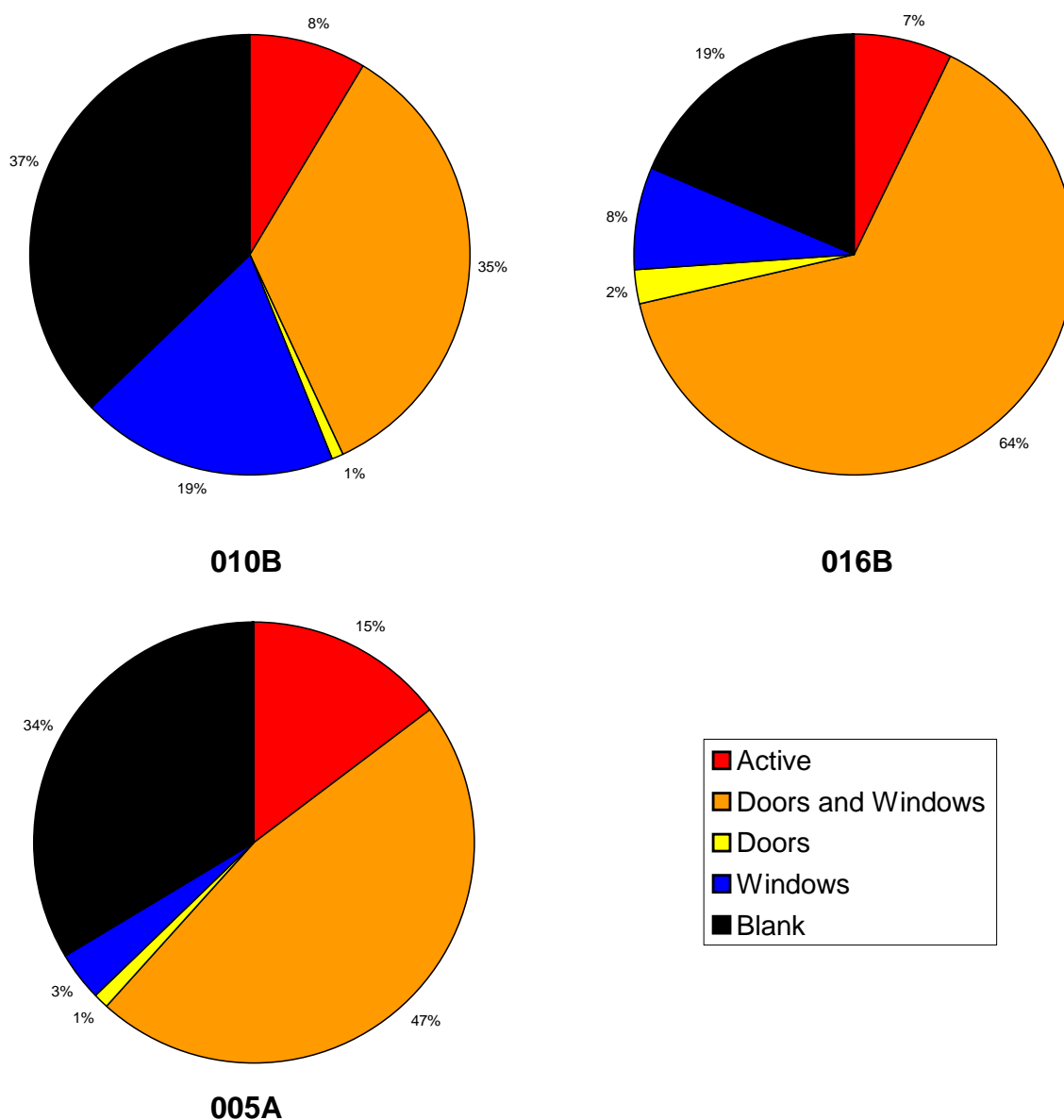


Figure 30. Proportion of different frontages in each area, clockwise from top left: 010B, 016B and 005A.

Frontage	010B %	016B %	005A %
Active	8	7	15
Doors and Windows	35	64	47
Doors	1	2	1
Windows	19	8	3
Blank	37	19	34

Table 3. Proportion of different frontages in each area.

The most striking difference between the areas is the high proportion of doors and windows in area 016B when compared to the other two, which have similar high proportions of blank walls. The difference in frontages can be related to the difference in housing forms along the lines of Hanson's findings for a number of developments from different eras in Islington (2007). The presence of a high proportion of doors and windows is related to the form of traditional terraced houses, which present their 'face' to the public domain – an example of which is given for each area in the pictures below.



Figs 31 - 33. Examples of terraced houses providing 'doors and windows' frontage in each area, respectively 010B, 016B and 005A.

High proportions of windows at ground level are related to two elements: firstly, vertical access in buildings which are entered sideways from the private domain, or have a communal access which stretches along a very small proportion of the building frontage and is often set back from the main streets; secondly, because much of the housing interfaces with the public domain through all its sides, which is characteristic of much Modernist housing and unlike back-to-back terraced houses. This housing is often 'inverted', with its back, the private gardens or the windows facing the main streets while the front, the main doors usually together with windows, is accessed from communal areas, which are publicly accessible, although they are often

perceived as private space and rarely visited by non-residents. An example of this type of frontage in each area is given in the pictures below.



Figs 34 - 36. Examples 'windows only' frontage in each area, respectively 010B, 016B and 005A.

The proportion of blank walls is fairly high in all areas, but much lower in 016B than in the other two. These again mostly relate to two elements: housing with vertical access and the presence of garages at ground floor level, especially in the blocks of the Andover estate in area 005A, but most often they are associated with high fencing of private gardens, which face either the main street or the communal areas. These types of private space are (and were) often walled in area 016B, while their privacy is protected by high solid fencing or vegetation in the other two areas – as shown in the pictures below.



Figs 37 - 39. Examples of 'blank' frontage in each area, respectively 010B, 016B and 005A.

This latter protection for the households was observed to have been developed organically by residents' intervention or added to the buildings at a later stage, rather than designed into the developments. The detailed analysis of the frontages by area is reported and discussed in Appendix II. All these and previous findings are critically discussed in the following chapter.

Discussion

Unlike in Victorian times, the distribution of classes across the housing stock is not solely market driven and therefore is likely to be somewhat skewed by the intervention of the welfare state. Social housing provision is naturally associated with a level of poverty, especially in present day London where this has become the domain of the lowest skilled and unemployed as the working classes, for whom much of this housing was originally designed, slowly moved out of this tenure into the private rental or ownership market (Hamnett, 2003, pp.10-13). However, the spatial analysis revealed significant findings on a number of occasions, especially when different tenures were more equally mixed throughout the area rather than clustered together in larger estates. The distribution of poverty can be analysed spatially because it is still market driven and thus has a natural relationship with people's means to meet a private market rental or purchase price. The building of large amounts of social housing does not necessarily skew the natural distribution or impact on the hierarchical wealth structure of one area. This is because the locational choice for the construction of social housing has in itself been largely market driven: it often corresponds to areas that were poor in Victorian times. These are likely to have been the focus of slum clearance in post-war England, thus creating a situation where the private, wealthier housing market has retained its residential areas from the past, and the social market has been relegated to less desirable, cheaper areas.

Area 016B, which has the lowest proportion of benefits claims, was found to have overall higher *choice* values when compared with the other two (-0.92 as opposed to -1.02 for area 005A and -1.03 for area 010B). This is an important finding because it suggests a relationship between the ability to access the highest number of shorter possible routes from one's residence and the ability to create wealth, at a radius which fits in with commuting patterns and distances travelled to work even by the lowest skilled (fig. 4).

Vaughan, Chatford Clark, *et al.* (2005) found a relationship between poverty groups and values of *local integration* in Charles Booth's 1889 map of the East End of London. Partly because of this, the author of this thesis expected to find a stronger relationship between pockets of deprivation and more local

radii than 3.6Km. However, as discussed above, the distribution of poverty in modern times is likely to be less straightforward than for Victorian times. This is affected by allocation policies, the socio-economic make up of an area, and other factors relating to the market desirability of the housing, such as the quality of the environment, the transport infrastructure, as well as stigmatisation of social housing on the one hand and popularity of historical properties on the other. Moreover Vaughan's analysis (2007) focused on two areas, Soho and the East End that, unlike Islington, had a long history of being 'cut off' from life in the city, as well as comprising large areas of widespread deprivation. The wider radius of the association between deprivation and spatial values in modern times is likely to be related to the transport developments that allowed modern society to become more highly transpatial than in the past. This is even more likely to be so in the dense environment of Inner London, where all the three areas have easy access to transport nodes, shops, and various services. Analysis of walking distance from the above to the residential areas revealed no particular difference between the three study areas. If anything, and perhaps surprisingly, residents of area 016B seemed to have the longest distance to travel to shops and services as well as public transport nodes; the analysis of the frontages also showed that this area had the lowest amount of non-residential land uses. However, the deepest segments of this area were observed²⁴ by the author to be busier in terms of vehicular movement than their counterparts in the other areas; much private car parking was provided in the prosperous northernmost part of area 016B. This factor is possibly related to the car-ownership ability of the wealthier, which allows them to have more decision-making options as to residence, when it comes to distance from services.

It is, however, likely that a proportion of the areas' population, especially among the poorer and lower skilled, would be affected by the very local resources of their neighbourhood. These groups are likely to include the elderly, the disabled, single parents, and others who have close and strong local links, such as the presence of a particular religious or ethnic group in the area. Ideally, this matter would be looked at in more detail with particular

²⁴ Observations of movement were not run systematically, but all three areas were visited a substantial number of times, in different seasons, at different times of the day and on different days of the week.

reference to the affected groups, but this is beyond the scope of this research. However, it is important to account for this element as it may complement the findings about *choice* values with regards to the spatial distribution of benefits claims.

The relationship between modern poverty blocks and mean *segment length* is not as strong as that found by Vaughan, Chatford Clark *et al.* for mean *axial length* and Victorian poverty blocks (2005, p.7). This may again be due to modern developments by which very poor tower blocks or very expensive flat developments can be associated with very short segments. This is particularly relevant to the understanding of the social make up of modern Inner London housing, where these types of developments are polarised by their interface and environment. Their relationship to low *choice* values signifies an isolation from the wider urban network, which sees the 'world go by' on higher *choice* routes. However, the prosperous blocks found on segments with low *choice* values in area 016B were markedly different from the poor blocks located in similar segments throughout the study areas in two ways. Firstly, the interface of the former has an outward-facing form, with the entrances 'looking on' the main streets and, secondly, the segments of access are located just off these and clearly marked as private²⁵. Moreover these blocks are located within areas already highly constituted by doors and windows such as area 016B, as well as the middle part of area 005A. Such 'constitutedness', most often associated with traditional terraced housing, is more sparse in area 010B, as this has undergone more redevelopment than the other two and the original Victorian blocks have been 'broken up' with the transformation of much private green space into public and communal space. These spaces are often located deep into the circulation system of the area and reached through segments of low *choice* values and have been observed by the author to be little-used, quiet spaces. In some sense an exception is the postmodern development in the south-eastern part of area 005A, which is highly constituted by doors and windows, while having high proportions of benefits claimed. This is naturally related to its nature as a social housing development, however, its design, possibly due the location of this

²⁵ Or even gated in one case in area 005A.

development at the back of the railway and of another housing estate to its west, is essentially made up of two cul-de-sac layouts along the boundaries posed by these elements. This is what causes the low *choice* values of some segments in this area despite its vicinity to major routes such as the Isledon Road and Seven Sisters Road, and what isolates this development from the wider urban network.

The conclusions to be drawn from this discussion are detailed in the following chapter.

Conclusions

The objective of this research, to construct a methodology to analyse the localised variations of poverty levels in the urban form, has been met in that the analyses revealed elements of both the urban morphology and housing form which can be consistently associated with either poor blocks or prosperous blocks. Variations in their spatial distribution can be explained by close observation of the nature of residential areas and their socio-historic contextualisation. In this regard, Charles Booth's map has proved invaluable in revealing similarities and differences between modern times and the past, and therefore between two different types of housing and urban structures. Area 016B has changed little and has retained its hierarchy of wealth marked by the New River. Area 005A has also retained similarities, with the better-off and mixed blocks in the middle of the area, and the poorer relegated to the more fragmented area to the north; while area 016B has changed dramatically, both in its housing and urban form, and has become relatively poorer than in Victorian times. It is suggested here that this change is due to the fact that the urban morphology has become more fragmented and more similar to other contemporary and Victorian poverty areas; this fragmentation was caused by Modernist architectural designs and space layout concepts applied to the construction of social housing in a former middle-class area that was much redeveloped after World War II.

The main limitations of this research lie in the shortcomings of using housing and council tax benefits data as an indicator for poverty, rather than a more complex set of variables. The methodology used is time-consuming and proved not to be applicable to a borough-wide scope of analysis, unless a process of automation for summarising and processing data could be created, which is beyond the scope of this research. The measures used by the methodology are also sensitive to very subtle changes in the spatial model, the recording of housing characteristics, and the summarisation of data. For this reason, detailed knowledge of the study areas, as well as sound criteria to be used for ensuring consistency in data recording, processing and modelling are needed if a sound evaluation of the areas is to be made. Despite these limitations, the findings show that the aim of this research – that of assessing

whether there is any relationship between urban morphology, housing form and poverty - was met by highlighting the fact that different housing design characteristics are persistently related to tenures associated with different levels of wealth, and that a specific spatial measure (*choice*) is, to some extent, related to the distribution of means and thus the distribution of poverty and design of these different tenures.

In more detail, the main findings from the application of this methodology to a set of three different study areas are:

- At the level of LLOAs, there is no significant relationship between spatial measures and the distribution of poverty, except for the measure of *choice*. This plays a part in the location of the prosperous area as a whole, as well as in the localised distribution of poverty within areas 010B and 005A. It is suggested here that the reason for this correlation lies in the nature of the complex system of resources required for wealth creation, although such a statement would require a much more detailed analysis, possibly at the segment level, of skills, qualifications, and occupations, which is not viable in the scope of this research.
- There is a relationship between the distribution of poverty and housing forms which are inward-facing and poorly constituted, as well as with the presence of poorly used public and communal spaces. This is partly due to the fact that much social housing comprises developments influenced by Modernist ideas, which often bears such characteristics. These ideas were applied to much public housing in the 1960s and 1970s, but the private market generally stayed clear of them, always preferring more traditional or traditional-looking housing forms.

The analysis has revealed the value of summary data related to poverty, which have a meaningful relationship to the urban environment, if this is to be analysed and assessed in social research on deprivation, as well as in the making of regeneration policies and projects.

Most importantly, the findings show a strong polarisation of wealth: a situation, where the poorer, often in social housing, and the richer, often owner-occupiers, are found in the more isolated areas of the urban system (by need for the latter and by choice for the former), with the mixed income classes interspersed between them, and often in the private rental market. This is in line with the latest findings of Dorling, Rigby, *et al.* that “both poor and wealthy households have become more and more geographically segregated from the rest of society” (2007, *key points*). However, both the design of social housing and the urban morphology associated with it characterises the distribution of persistent poverty areas (the northern end of area 005A and the southern end of area 016B), as well as the distribution of new poverty areas (the postmodern estate in area 005A and area 010B overall).

These conclusions have relevance for the design and regeneration of social housing, for social research into wealth distribution and its spatial characteristics, as well as into the social implications of housing and spatial elements that characterise the different classes of society and their polarisation.

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Appendix I – Space Syntax Measures and Definitions

Space syntax is both a theory and a method for quantitatively describing patterns of spatial layout and relating these patterns to social activities such as movement, behaviour, and even social meaning and interpretation. Space syntax theory is based on two fundamental ideas: firstly, that space is not simply a background to human activity, but an intrinsic aspect of it and, secondly, that important characteristics of architectural and urban space are not just about the properties of individual buildings and spaces, but also about how the inter-relations between these spaces combine to form a city as a whole (Hillier and Hanson, 1984). This network of spaces was termed by Hillier (1996) as *configuration*, and by analysing mathematically these relationships of spatial layouts it is possible to develop an understanding of space independent of architectural type and style. In the *Social Logic of Space*, Hillier and Hanson (1984) assert that human societies are spatial phenomena and that spatial orders are one of the main ways in which members of society live their social existence. Viewed in this way, space can be seen as an expression of human society and can be analysed to understand particular characteristics of society. This is done through a process of investigating how spatial configuration relates to people's use and experience of space.

The **axial map** is the basic tool of space syntax analysis and is constructed by drawing the fewest and longest lines of sight (axial lines) that cover the whole system of accessible open spaces. **Axial lines** are the elements most spatially extended in a structure of open spaces such as a city and thus the set of longest straight lines that are at a tangent to the boundaries of blocks of buildings form the axial model; these boundaries define the limits of visibility and permeability within a system (Hillier, 1996).

The axial map is analysed as a set of nodes and lines, and different types of measures are derived regardless of metric distance. These include local and global configurational measures. The former describe the relationship between nodes and other nodes closely connected to each other, while the latter describe the relationship of all nodes to all other nodes in the system.

A set of justified graphs from each space in the system is constructed for all spaces in the system. A **justified graph** is constructed from any particular space in the system, considered the root of the graph, and all other spaces directly connected to this are linked to it one level up; the spaces connected to this are linked a second level up and so on until all spaces in the system have been connected. This allows the calculation of a measure of **depth** of any space from any other given space. **Mean depth** is calculated by averaging the depth of each node within each possible justified graph of the spatial system.

Integration in practice measures the relative accessibility of nodes within a spatial system; spaces, which are found deep in a system have lower integration values, while higher integration values usually correlate with high levels of movement and activity and thus with social interaction. **Local integration** has a radius of 3 steps in the justified graph and examines the configurational relationships of small-scale areas, while **global integration** examines the relationship of all nodes to all nodes and therefore reveals large-scale configurational characteristics of the whole spatial system. Local integration has been shown to strongly correlate with pedestrian movement and the movement of residents and people who know the study area well, while global integration has been shown to strongly correlate with vehicular movement and the movement of people who have little knowledge of an area, such as non-residents and tourists.

A **segment map** is derived from the axial map by literally segmenting each axial line at every intersection with another axial line, thus deriving the smallest measurable element of the urban form: the street segment. This model can be analysed using metric radii and is thus able to take into account distance when analysing urban morphology, which makes it a particularly useful model when assessing the relationship of the urban environment and social variables against a background of commuting distances and accessibility to services.

Choice in practice measures the 'flow' of movement through space and is calculated by counting the number of shortest paths connecting all spaces to all other spaces within a specified distance. **Global choice** measures the number of shortest paths connecting each space to all other spaces in the system, while **local choice** measures the number of shortest paths

connecting each space to all other spaces within a certain local distance, which could be a 'walkable' distance (up to 1200m), a 'cycleable' distance or any other that suits the research's needs.

Numeric and metric measures are a valuable background to space syntax analysis and can reveal basic aspects of spatial networks. For example the number of axial lines in an axial map and the number of segments in a segment map or any sub-areas of these can be used as baseline to quantify systems and compare them. Metric measures such as **axial length** and **segment length** are also useful in describing physical properties of space and in assessing the relationship between syntactic measures and other properties of space.

Appendix II – Frontage Analysis

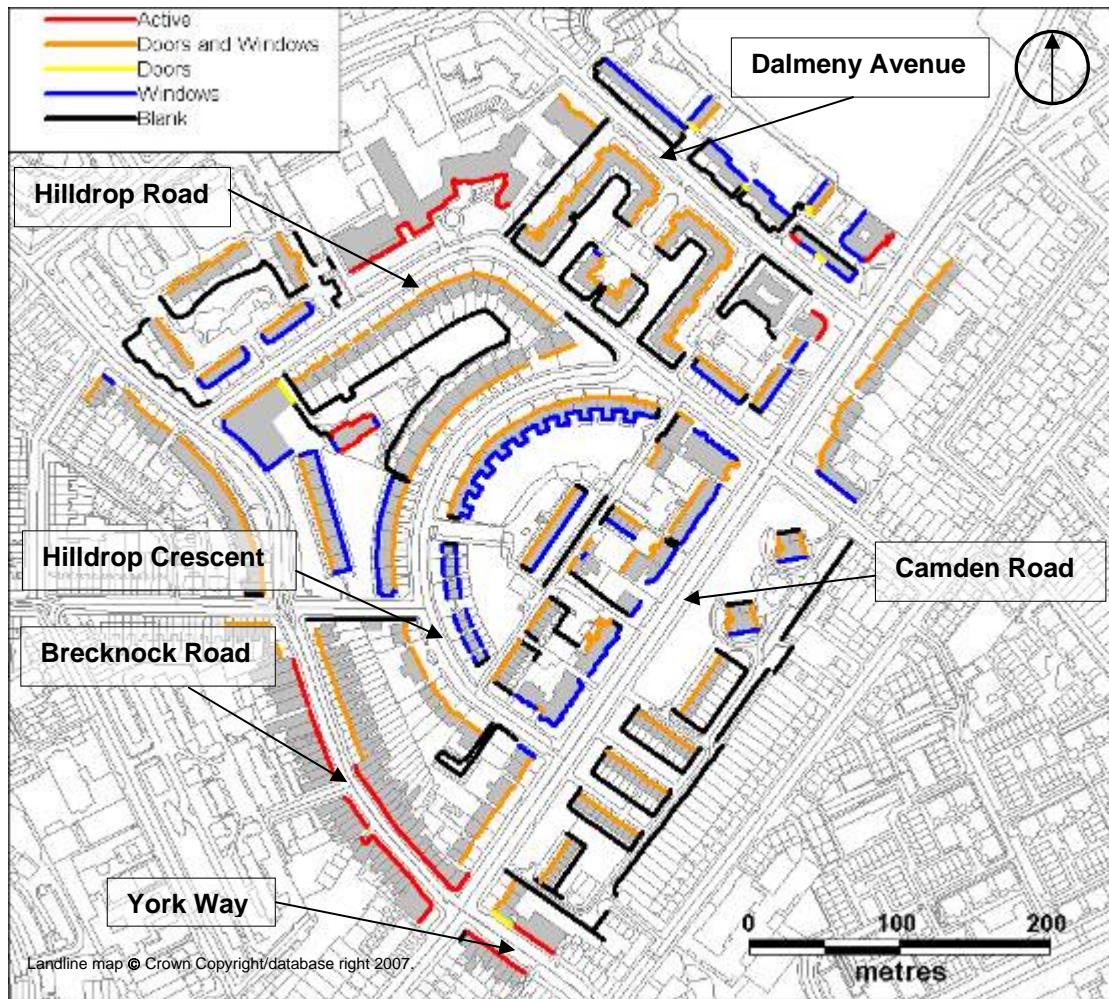


Fig. 40. Frontage Map of Area 010B.

This analysis reveals the location of non-residential land uses, which are mostly clustered along York Way/Brecknock Road. It also highlights the long stretches of blank frontages caused by fenced private gardens overlooking communal spaces as well as by ground floor garages, and, again, long stretches of windows due to 'inverted' buildings accessed from the deeper circulation system within the blocks.

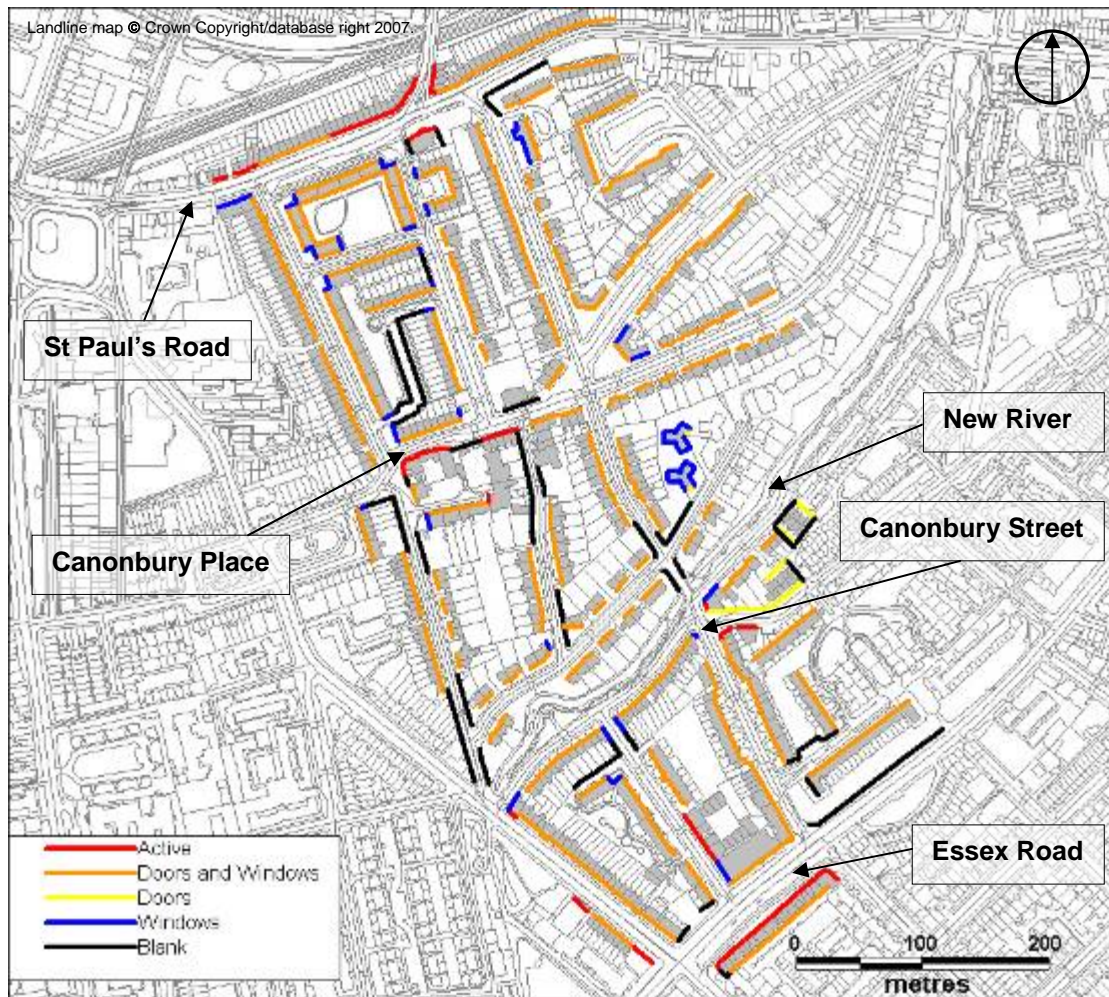


Fig. 41. Frontage Map of Area 016B.

This analysis shows the large number of doors and windows frontages associated with traditional houses and the location of non-residential land uses, mostly along St Paul's Road and the Essex Road, but also along Canonbury Place. It also highlights the few 'inverted' buildings, part of the social housing estates to the east of Canonbury Street and to the south of the Essex Road, although in this latter case, the inversion is caused by the location of active uses along the main road.

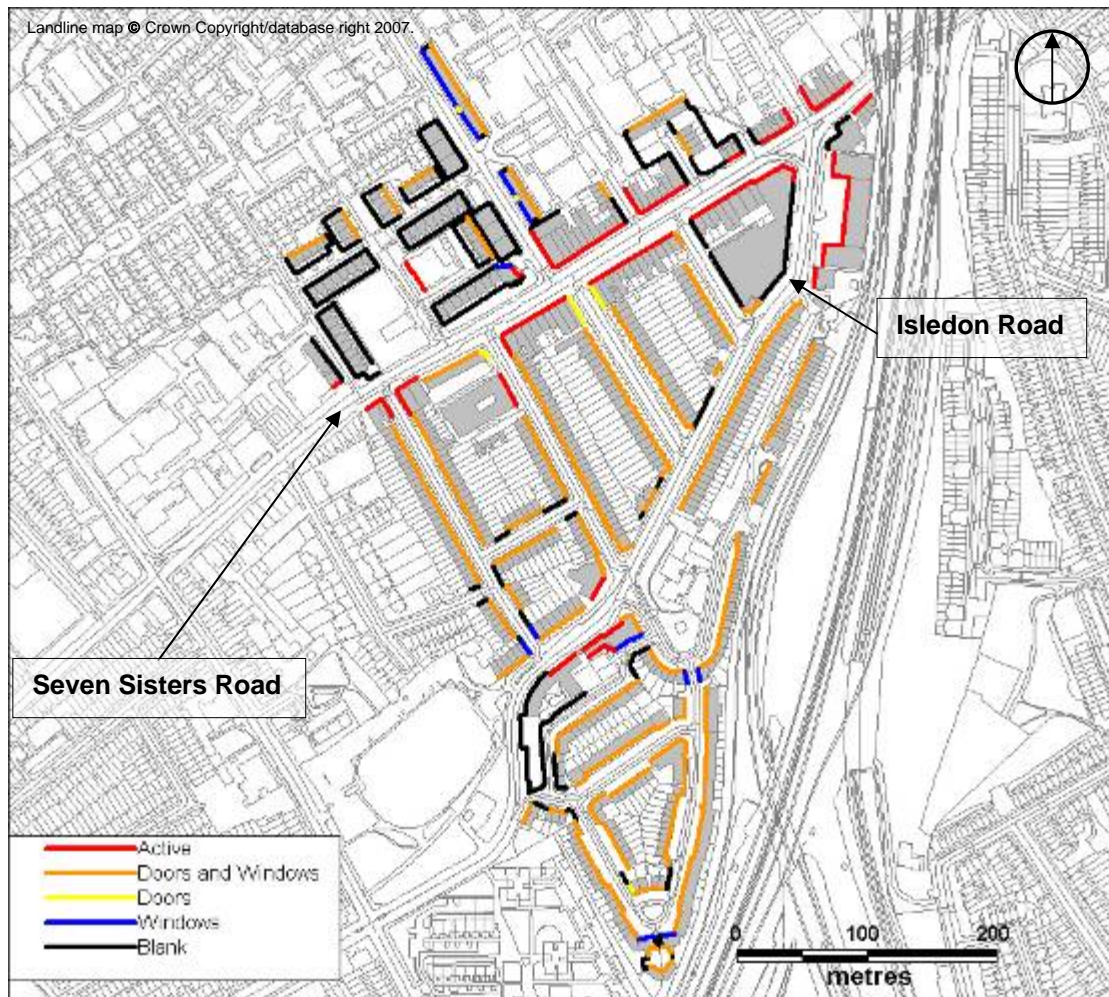


Fig. 42. Frontage Map of Area 005A.

This analysis reveals the long stretches of doors and windows frontages associated with the traditional terraced houses and with the postmodern development. It also highlights the dramatic concentration of blank walls on the Andover estate, due the Modernist design of its blocks.

Appendix III – Photographic Survey

Area 010B



Figs. 43 - 45. Example of windows only frontage across a see-through fence (43); blank frontage caused by vegetation along private back gardens overlooking a communal area (44); and blank frontage caused by fencing along private gardens overlooking the main street (45).



Figs. 46 - 48. Example of blank frontage cause by fencing along private gardens overlooking the main street (46); the isolated community centre to the right and blank frontage along private gardens to the left (47); and walled blank frontages along private gardens across a see-through fence defining a little-used communal green space (48).



Figs. 49 - 51. Example of blank frontage caused by fencing and vegetation along private gardens facing the main street (49); access to housing through a dead-end car park off the main street (50); and a little-used communal green space, cut off from the main street through fencing and bordered by blank frontages caused by fencing of private gardens overlooking the space (51).



Figs. 52 - 54. Example of windows only frontage caused by the location of access to the housing through the deeper circulation system in the middle of the block, rather than from the main street (52); footpath bordered by doors and windows frontage to the right and blank frontage caused by fencing of private gardens to the left (53); and again windows only frontage caused by the L-shaped building, whose communal access is along a short stretch of its other frontage (54).

Area 016B



Figs. 55 - 57. Examples of clearly marked private spaces giving access to housing.



Figs. 58 - 60. Examples of windows only frontage caused by an 'inverted' building in the first instance (58) and a 'corner' building in the second instance (59); and a little-used communal green space, cut off from the street through see-through fencing (60).



Figs. 61 - 63. Examples of blank frontage caused by vegetation along a communal green space (61); fragmented routes and blank frontage within a housing estate (62); and small private blocks of flats with clearly marked private access (63).



Figs. 64 - 66. Examples of blank frontage caused by walled private gardens (64-65); and example of inverted terraced houses whose main access is the rear access (to the left), facing a blank frontage (66).

Area 005A



Figs. 67 - 69. Example of blank frontage to the left, caused by vertical access to the housing, facing a windows only frontage, except for a short stretch for the communal entrance (67); another example of blank frontage caused by the front doors of the ground floor being hidden behind utility rooms (68); and an example of a poorly used communal green space on the Andover estate (69).



Figs. 70 - 72. Example of a poorly used communal green space (70); example of blank frontage caused by ground floor garages (71); and an example of windows only frontage to the left and blank frontage to the right along a short segment on a fragmented route leading into the Andover Estate (72).



Figs. 73 - 75. Examples of a blank frontage caused by lack of windows at ground floor level or fencing of communal green space (74-74); and the western cul-de-sac on the postmodern development (75).



Figs. 76 - 78. A short dead end, just off the Seven Sisters Road with social housing to the right and a blank frontage to the left, caused by a closed-down shop (76); the communal green space on the postmodern development (77); and the deep, eastern cul-de-sac on the postmodern development (78).