

The shape of belonging in the outer London suburbs: beyond a discourse of alienation

Laura Vaughan¹, Mordechai (Muki) Haklay², Sam Griffiths¹, Catherine Emma Jones³

¹ UCL Bartlett School of Graduate Studies, University College London, 1-19 Torrington Place, London, WC1E 7HB

² UCL Department of Civil, Environmental and Geomatic Engineering, University College London, Gower Street, London, WC1E 6BT

³ Department of Geography, University of Portsmouth, Winston Churchill Avenue, Portsmouth PO1 2UP

Email Laura Vaughan: l.vaughan@ucl.ac.uk

Telephone Laura Vaughan: +44 (0)207 679 1981

Abstract

Suburbs are commonly perceived as essentially non-urban and as non-places without a spatial logic of their own. Such theories ignore the centrality of suburbs to everyday life. This paper presents evidence to show that suburbs have an independent public life that is real, measurable and diverse. A combination of quantitative analysis using space syntax and geographical analysis and qualitative analysis using questionnaires, ethnographic observations and video footage shows that London's outer suburbs are places of flows at different scales, supporting activities of differing spatial qualities and demands. This diversity of activities and people explains how suburbs can adapt to change and become part of the urban fabric through time.

Introduction

We have stated elsewhere¹ how the common perception of suburbs as an 'other' place is part of the tendency for the suburbs to be mythologized as places that exist somewhere else and are inhabited by people 'unlike ourselves'. Webster, "Expanding Suburbia"² has argued that it is the perceived insubstantiality of suburbia 'devoid of cultural and aesthetic value so that the very absence of signification becomes a haunting presence' that has come to constitute the hermeneutic object (ibid, p. 2). It is precisely this 'presence of absence', portrayed in films such as *The Time Bandits* (1980) or *Edward Scissorhands* (1991), which creates the dramatic potential for the fantastic events to unfold and this is the case in the written text too.

Modarres and Kirby, “The Suburban Question”³, have pointed out how in the United States, mistrust of communism was reflected in literary critiques of conformity in the suburbs. Augé characterises such locations as “Non-Places”, in which historical identity is gradually eroded by the social and technological forces that strip them of their local contexts. ⁴This theorisation renders suburban space as textureless, defined by easy accessibility to nodes in what Castells, “The Informational City”⁵ refers to as the “space of flows”. In contrast, Massey, “For Space” ⁶, contends that such global geometries must be practised locally as well as *vice versa*. All places have their role in the relational network that forms the geography of human life, and so long as the hierarchies loved by planners and policy makers exist, their use to pigeon-hole places can mask the contributions of places that are tagged as ‘unimportant’. When suburban space is presumed to be unproblematic, in discourses that seek to capture its essence, they render it, by default, as marginal, ephemeral, inert and essentially *other* to everyday experience.

We will show that suburban places have their own independent public life that is real, measurable and as diverse as in the urbane city centres. Quantitative analysis using the architectural methods of space syntax and geographical spatial analysis demonstrates that a range of flows of differing distances and purposes is made possible by the inter and intra-urban network of connections through the city, whilst qualitative analysis using questionnaires, ethnographic observations and video footage in and around London’s suburban town centres presents evidence for the demographic diversity present in these places.

Suburbs as places of communal life

The architects and planners behind the Garden City Movement emphasised the importance of local centrality as a focus for communal life. Herbert Gans showed that spatial proximity was vital for local social relations, but primarily where there is a shared background or interest⁷. His view was fundamentally aspatial, suggesting that the neighbourhood (or spatial layout at the larger scale), did not affect social relations, rather the social mix (or lack thereof)⁸. Subsequently Webber⁹, with his notion of the “Nonplace Urban Realm” proposed that with the advances of modern technology, there would be a lesser need for face to face communication. Webber claimed that urbanity was a measure of the quality and diversity of human life, rather than a stock of land or buildings. At least thirty years before the advent of mass use of the internet, Webber was effectively saying that ‘community’ does not require an urban-like dense form – vindicating the dispersed suburban lifestyle. His ideas were taken up by the planners of the last British New Town, Milton Keynes. Webber’s influence led to an emphasis on the importance of communications and locations over space and place - high accessibility between all the activities of the city and dependence on private car – an assumption that most people will want and own cars and that public transport demand will be limited. This is a natural progression from Christopher Alexander’s “A City is Not a Tree”¹⁰, who made a distinction between natural and artificial cities, criticising designers who create tree-like structures and proposed instead a ‘semi-lattice’ structure, which would create overlap among the

various elements of society, as opposed to nesting among the elements. His claim is particularly apposite in today's network society, which is 'thick' with overlapping spatial and non-spatial communities¹¹.

Despite the fact that, as in Ruth Durant's study of 1930s Watling,¹² an early generation of social researchers had already demonstrated how it took time before newly settled communities started to form friendships¹³, British social research has maintained its standard critique of suburbs as places lacking in communal life. This critique has been particularly widely propagated since the publication of "Family and Kinship in East London"¹⁴, in which life on a suburban social housing estate is portrayed as destructive of traditional communal structures. Despite the fact that Willmott and Young,¹⁵ found in a later study of "Family and Class in a London Suburb" that "most people were contented enough" with life in the suburbs (ibid: 115), the myth of anomie and social dysfunction persists throughout the academic and policy literature. Jerry White, "Trouble in Arcadia"¹⁶, suggests that this typifies a certain sort of casual thinking in which the suburbs are held responsible for urban failures rather than for their own successes. Indeed, Mark Clapson, in "Invincible Green Suburbs, Brave New Towns"¹⁷ has shown that suburban neurosis and 'new town blues' have little to do with mental health problems and more to do with oft repeated misinterpretations of an early study of the move to an outer-London overspill estate¹⁸ – misinterpretations which can be found, without any criticism, across the mental health literature.¹⁹

The Suburb and the City

The relation of the suburb to the central place and region involves a more rigorous conceptualisation of suburbia in the context of theories of the urbanisation process. At present, the debate falls into three distinct categories: firstly, the suburb as an extension of the central place and dependent on it; secondly, the suburb within a polycentric region; and thirdly, the suburb as 'sprawl' - almost as a polluting element of the city.

The first category typically derives from a perspective of a 'rise of the suburb' from a rural settlement or small town through various phases of development to its 'absorption' into the urban. For the UK, urban histories^{20; 21; 22} all fall into this category but also the mass of studies in which the key suburban relationship is with a primary central place naturally assume this historical background. The development of suburbs in this sense is typically understood as residential²³ and therefore dependent on the urban area for many of its functions. The difficulty is that the role of centrality in the suburbs themselves is overlooked and therefore the role of the suburban centre among other centres is relatively marginalised.

This relates to the second category of research which emphasises the polycentricity of centres in a region^{24; 25}. From this perspective, the relationships between suburbs

within a multi-nodal region receive stronger emphasis than within central place theory. The implications of this inter-dependency for the definition of the suburb are far reaching since, as Marshall argues, it suggests that a distinctive status as 'semi-urban' may be more appropriate than the reductionist 'suburb' (ibid: 274). Indeed some writers are suggesting the emergence of a new spatial phenomenon: the 'in-between-city', signifying a new form of polycentricity, dependent on inter-urban accessibility²⁶.

Suburbanisation characterised as 'sprawl' is nowadays primarily driven by the American New Urbanists and the proponents of the vitality of 'Edge City'. The debate on both sides of the Atlantic can be understood in terms of the debate between the idealists - for whom sprawl and the long commute is associated with the demise of the environment and community life^{27, 28} and the realists - for whom 'sprawl' is an expression of the power of suburban aspiration over urban living²⁹ or even a success story in its own right^{30, 31}. Others take a more neutral standpoint but recognise in 'sprawl' a distinctive settlement morphology^{32, 33}. This perhaps recommends a more dynamic (historical) approach to urban morphology in which successful settlement forms are understood to be emergent and persistent over time. Such a perspective is recommended by the emphasis on the suburb and shopping centre as outcomes of "non-plan", a perspective which upsets the post-war, idealist, tradition of planning^{34, 35}. This also relates to Sieverts' view of the suburb as an example of *Zwischenstadt*³⁶, or 'in-between-city'. The importance of this classification is that it defines a spatial form that is seen to be in distinct contrast to the traditional compact European city.

In futurist representations of the suburbs, such as 'boomburbs', novelty is perpetual; there is no time for a past to accumulate at locations where social and economic energy will soon move onto the next frontier. Such images are essentially static and facilitate against the asking of important questions such as what happens to an edge city when it is no longer at the edge and what is it like to live in one over an extended period of time? Older American suburbs that often began as frontier settlements have their own histories³⁷, although writing about them can descend rapidly to the 'suburban cliché', where the suburb, or borderland, is presented as a place of refuge between the "decadent city and the howling wilderness"³⁸. An over reliance on neologism serves to reinforce the assumption of suburban built form as 'other'; devoid of continuity with existing (or pre-existing) built environments and landscapes. In extreme cases of criticism of suburbs as edge city, they are depicted as zones of expulsion and alienation.³⁹ Ironically, this depiction of suburbs renders them incapable of adaptation or change since such strange built forms are represented as belonging essentially to the future rather than to the present. It is understandable why many scholars of the suburban are interested in the rapid emergence and apparently non-urban morphologies of these built forms. However, in the absence of a more substantive conceptual framework, too exclusive a focus on suburbs novelty implies a base representation of suburban space as *tabula rasa* - in the sense of undeveloped land - and therefore elides the question of how suburbs persist in time.

The Shape of Suburban Life

Our research has been concerned with the factors that shape success of centres over time and in particular the impact of morphology (pattern of streets) and diversity (different forms of activity) on this matter. We studied a broad range of spatial and social statistics on twenty-six suburbs in the outer London region (www.sstc.ucl.ac.uk/profiler) and carried detailed studies of behaviour and patterns of use in three of these (High – also known as Chipping - Barnet, South Norwood and Surbiton). Brief histories of the three centres we looked at in detail show that two were existing settlements (a hamlet and a village) that had a significant leap in growth after the coming of the railways, which enabled London's suburbs to extend out to High Barnet and Surbiton, while the third, South Norwood, did not exist as a settlement until the railway reached it. Whilst the railway connected at the larger scale, it also severed places locally – both Surbiton and South Norwood are segmented by the railway tracks. Surbiton enjoys easy access to the River Thames (even though this is not very obvious when you are in it). High Barnet is on the edge of London's Green Belt. South Norwood is not far from fine parks. All three suburbs originally attracted relatively prosperous families who liked being able to work in the centre, but live away from its unhealthy atmosphere⁴⁰. Shops and services, including a range of churches and public houses, sprang up to serve residents' needs. All three have experienced different waves of development, resulting in a mix of architectural styles. This has made it easier to house a range of lifestyles and ages. However whereas South Norwood has suffered from its extension alongside a busy road into London, Surbiton and High Barnet have principal streets parallel to or away from the railway, which means they are not quite as dominated by through traffic. As desires have changed, the groups of shops with houses above have been demolished in both High Barnet and Surbiton to make way for new enclosed shopping centres with parking attached. Interestingly in the case of High Barnet, the creation of the roofed 'Spires' shopping strip improved the internal accessibility of the town centre – creating a new connection from the older part of settlement to its late 19th century high street.

The changing nature of the retail attractions has also reflected demographic changes. South Norwood has experienced Commonwealth immigrants moving out from inner London as their economic situation has improved. In High Barnet, the population is still fairly traditional, and ethnic minority population has tended to concentrate in other nearby suburbs. Its economic spread ranges from moderate to quite prosperous residences in the Hadley Green end of the settlement. Surbiton, with its bars and restaurants, appeals particularly to young couples⁴¹. Two of the detailed cases serve a dispersed post-compulsory schooling population. In South Norwood a large new secondary school Academy has been built in recent years, while in High Barnet, the longstanding Barnet College (for post age sixteen) is being rebuilt to provide a full range of further education. Surbiton has a mass of students of Kingston University passing through on a daily basis and a number also live there.

This brief commentary illustrates the point that suburban centres have and always will be changing. Their position in relation to the city and the countryside is also in constant flux and indeed has an important impact on how the centre functions as

part of a network of smaller and larger centres elsewhere. Suburban centres can also be simultaneously different things for different people (dormitories, places of work or places of leisure)⁴². Analysis of the spatial transformation of the suburbs through time can be revealing of how their relationship with local and larger-scale flows is critical to their pattern of growth. Space syntax is ideal for this purpose.

Space syntax is a theory of space and a set of analytical, quantitative and descriptive tools for analysing the layout of space in buildings and cities. Space syntax analysis is concerned with systematically describing and analysing streets, squares and all open public space as a continuous system in order to measure the spatial relationship between each street and its surroundings. This is done by taking an accurate map and drawing a set of intersecting lines through all the spaces of the urban grid so that the grid is covered and all rings of circulation are completed. The resulting set of lines is called an 'axial map'ⁱ. Space syntax analysis computes all the lines – or nowadays the line segment, the section of line between two intersections - according to their relative depth to each other, using simple mathematical measures. The terminology used to describe this depth states how spatially *integrated* or *segregated* it is. The resulting numbers then form the basis for coloured up maps which represent the distribution of spatial integration. Another common measure is *choice*, which is calculated by counting the number of times each segment falls on the shortest path between all pairs of segments within a selected distance (the distance is commonly referred to as a *radius*)ⁱⁱ.

Using space syntax analysis we have found that where suburban centres have been sustained on lateral roads that are not major routes of through movement or those that have been bypassed, the distance from which the centres attract an incoming population is clearly restricted to the relatively local scale. In the case of Barnet (Figure 1a), we find that two nuclei of settlement were apparent as early as 1800, with further intensification having taken place by 1890. In South Norwood (Figure 1b), there was no settlement at all in 1800, whilst in Surbiton, (Figure 1c), an early nineteenth century nucleus, although still existing by 1890, was much more prominent after the coming of the railway later in the nineteenth century.

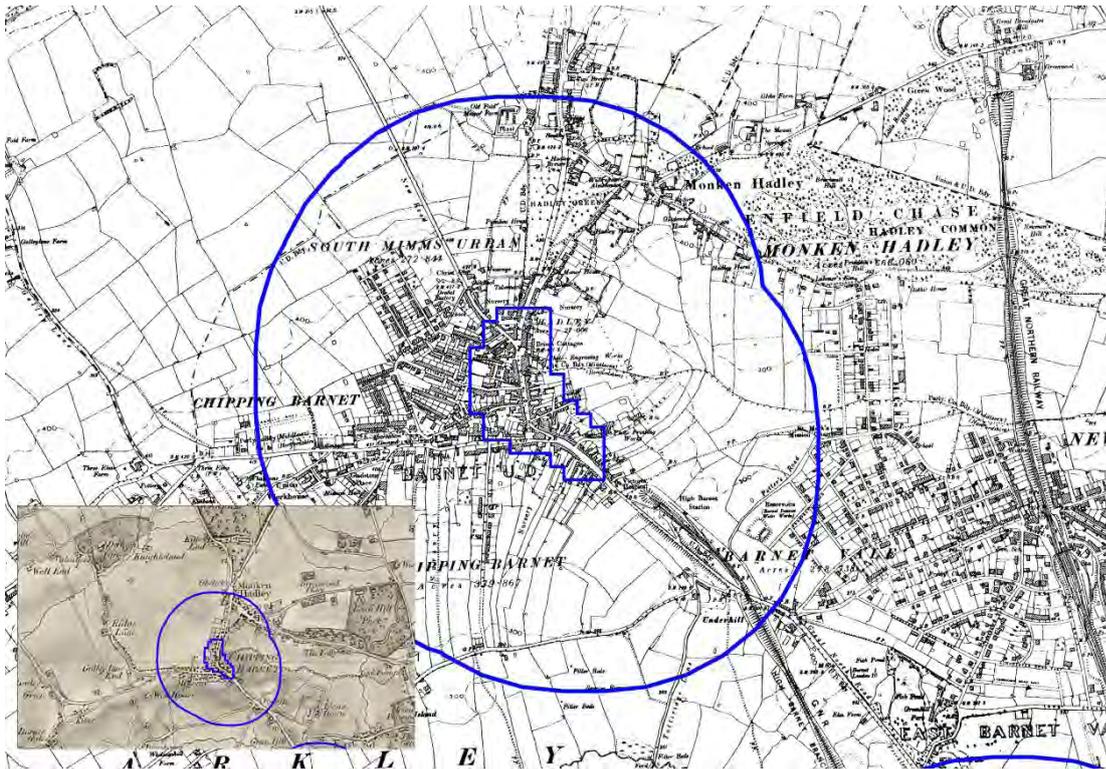


Figure 1a Chipping (also known as 'High') Barnet c. 1890 with inset showing Barnet c. 1800. Town centre and boundary of land-use analysis are marked in thick outline © Crown Copyright and Landmark Information Group Limited (2010). All rights reserved. (1890)

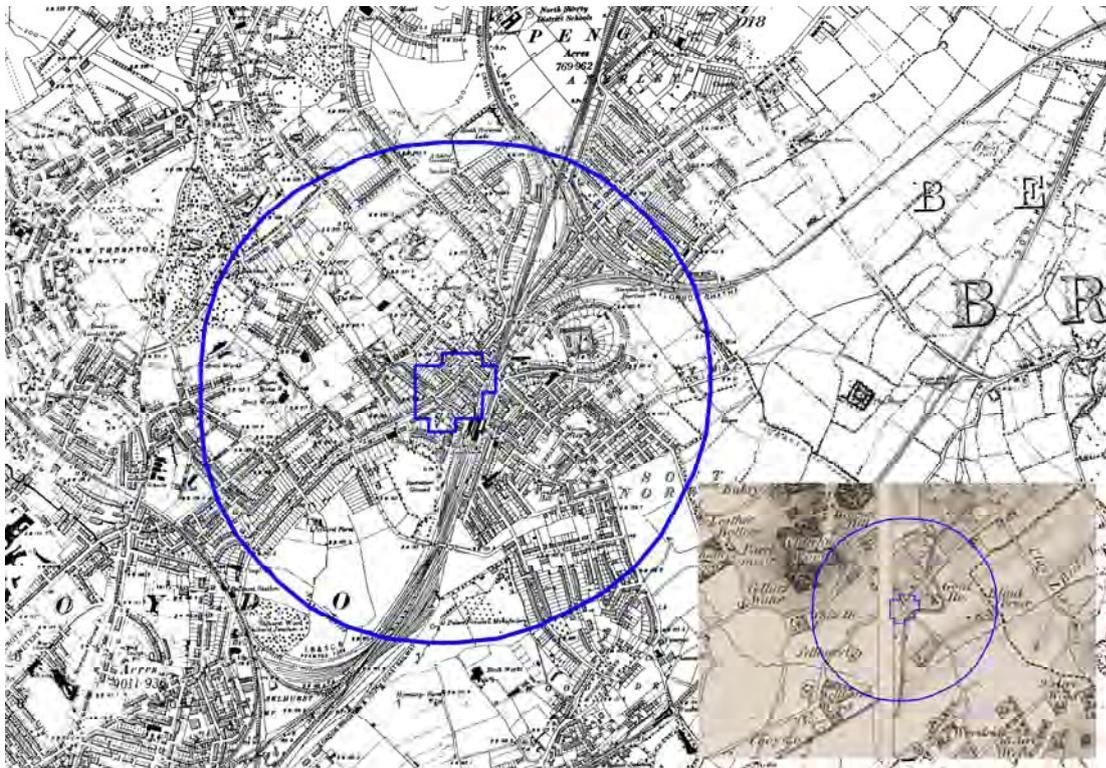


Figure 1b South Norwood c. 1890 with inset showing South Norwood c. 1800. Town centre and boundary of land-use analysis are marked in thick outline © Crown Copyright and Landmark Information Group Limited (2010). All rights reserved. (1890)

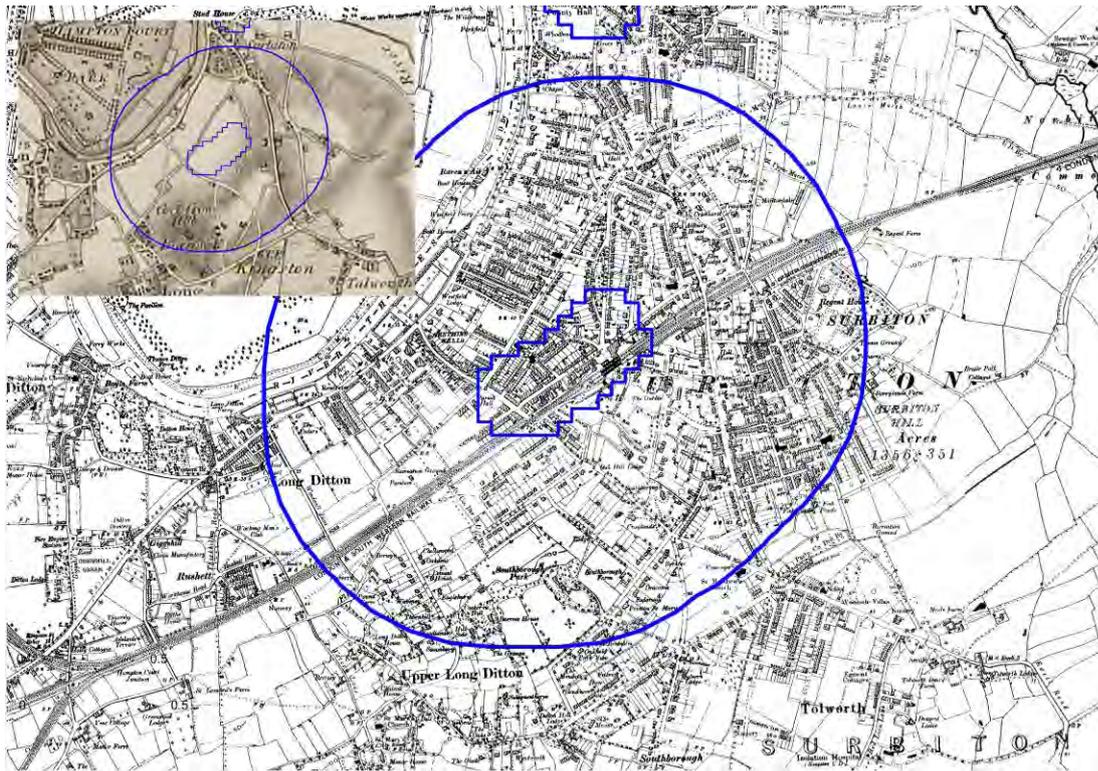


Figure 1c Surbiton c. 1890 with inset showing Surbiton c. 1800. Town centre and Town centre and boundary of land-use analysis are marked in thick outline © Crown Copyright and Landmark Information Group Limited (2010). All rights reserved. (1890)

This pattern of growth is expressed in the suburbs' spatial relationship to London overall. Analysis of a map of the entire extent of London using a Geographical Information System (GIS) was undertaken in order to explore the generic characteristics of local town centres. The cases were chosen from a sample of 113 town centres to represent typical small to medium sized suburban town centres. An 800m buffer around each centre was selected to represent an 'as the crow flies' neighbourhood of approximately 15 to 20 minutes walk from the town centre's core for which the land-use data were captured. In contrast with the retail and office focus of town centre studies, this analysis aimed to look at the full extent of non-residential activity in and around each of the cases studied. Space syntax analysis takes account of the degree to which a street section forms part of all paths at a set distance is quantified numerically and coloured on the map in a spectrum from red to blue. Taking the space syntax measure of 'choice' (the measure of path overlap, or in other words, potential through movement), we can see how the transformation of the centres over time is reflected in their varying importance at different scales. In the case of Barnet (Figure 2a), the earlier nucleus to the west is apparent when it is analysed for 'choice' at 400 metres, whilst the town centre as it is working today, is much more prominent at the all London scale. The same is the case for the other two centres. In the case of South Norwood (Figure 2b), it is evident how the dominance of the high street (running south-west to north-east) at the shorter distances of potential flows is replaced by the importance of the main connecting route south-east to north-west when analysis takes account of larger scale connections. This shift in potential flows at different scales is reflected also in the differing nature of the land-uses along these two streets, as indicated by the ranges of coloured dots (each dot

represents a non-residential land-use address). Whilst in Surbiton we find that the centre is almost insignificant at a scale measuring potential through movement at 400 metres. On the other hand, when we consider choice at radius n (taking account of London in its entirety), we find that the important large-scale routes skirt the centre to the south west and north. This analysis demonstrates how London's outer suburbs manage to support activities of differing spatial qualities and demands. The ability of places to maintain relationships with a variety of populations undertaking different types of activities is integral to how urban form can adapt to change over time.

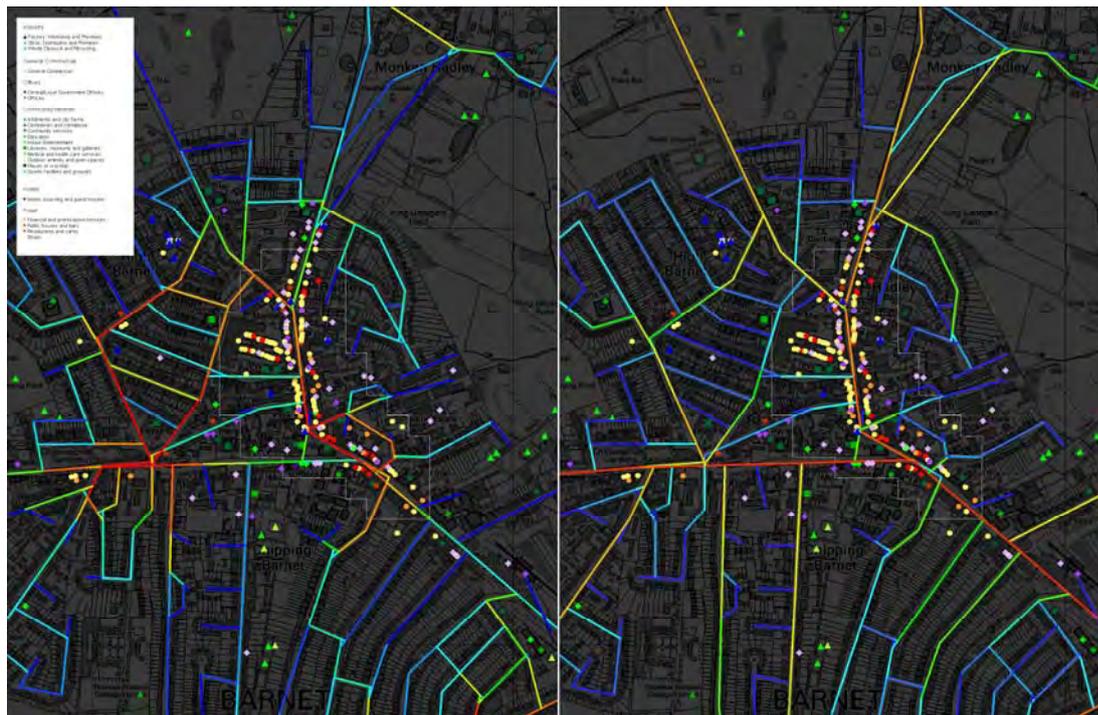


Figure 2a Map of non-residential activity and *choice* analysis of Chipping (also known as 'High') Barnet c. 2000 calculated for London within the M25, for *choice radius 400* (left) and for all of London *radius n* (right). Underlying map is © Ordnance Survey 2008.

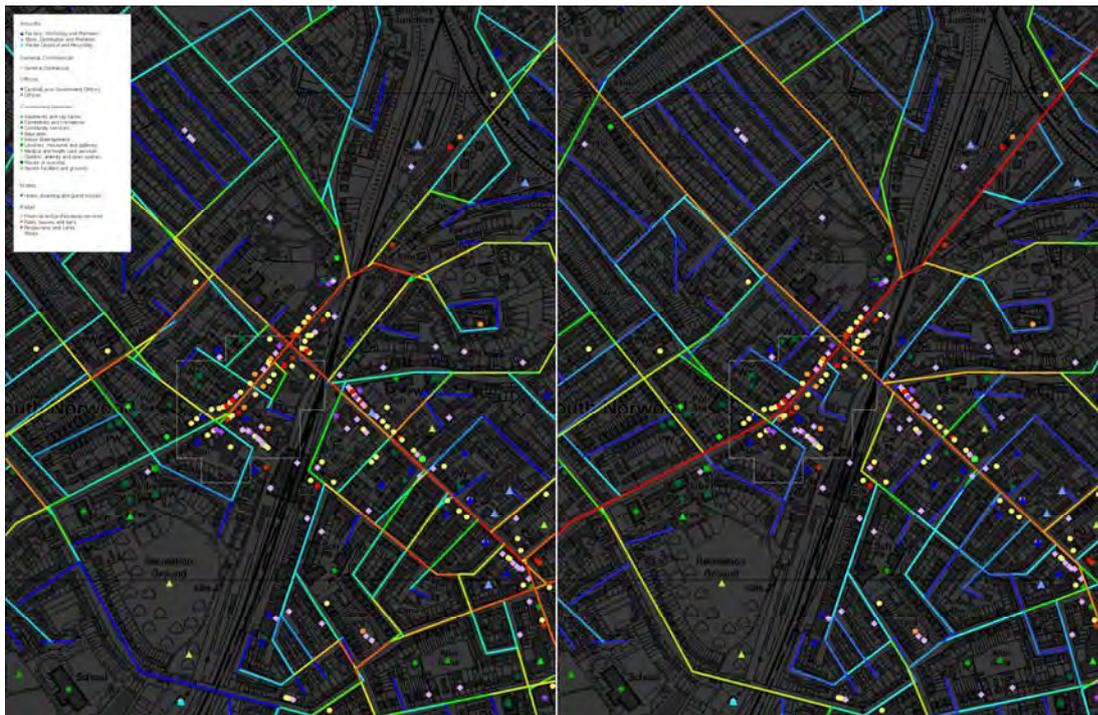


Figure 2b Map of non-residential activity and *choice* analysis of South Norwood c. 2000 calculated for London within the M25, for *choice radius 400* (left) and for all of London *radius n* (right). Underlying map is © Ordnance Survey 2008.

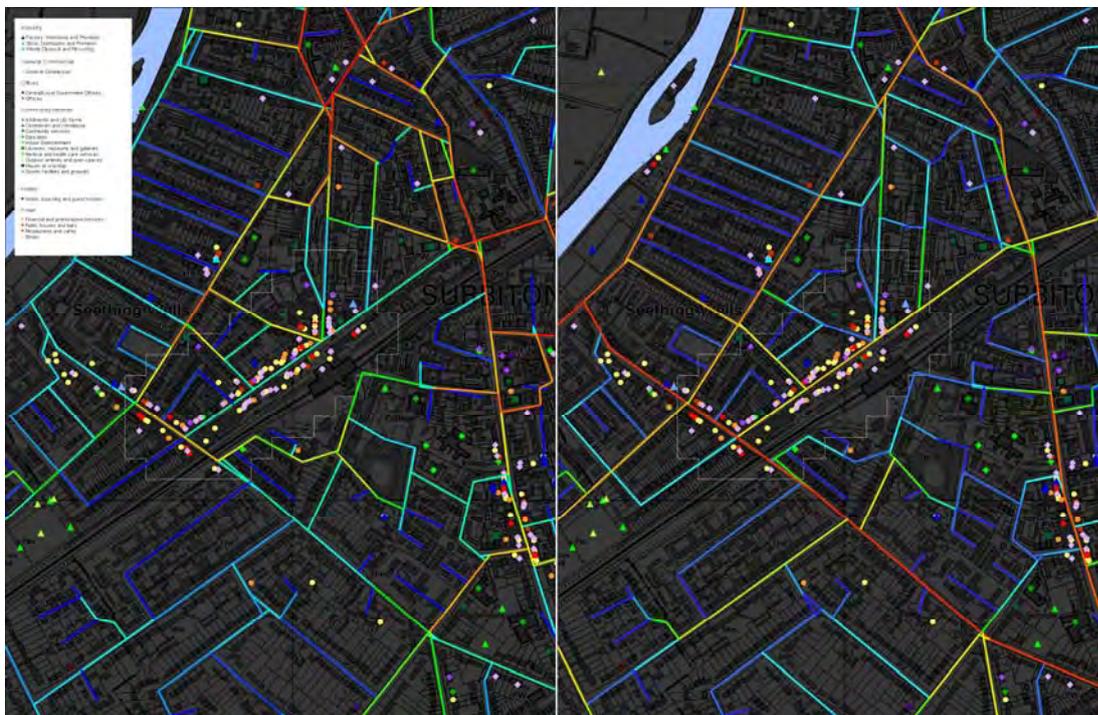


Figure 2c Map of non-residential activity and *choice* analysis of Surbiton c. 2000 calculated for London within the M25, for *choice radius 400* (left) and for all of London *radius n* (right). Underlying map is © Ordnance Survey 2008.

Indeed, analysis of Kelly's London Suburban Directory for 1901 Surbiton⁴⁵ reveals how false is the notion of suburbs (particularly 19th century railway suburbs) as having been created in tabula rasa. Examining the addresses along Berrylands Avenue, as an example of one of the more remote streets in the area at the time, finds a wide range of non-residential uses –sites of both production and consumption and both agricultural and commercial goods, all interspersed with private addressesⁱⁱⁱ. This demonstrates how the edge of the suburb at this time was simultaneously the edge of farmlands as well as central to suburban commercial life and production activity. Similarly, the directory listing for the east side of Maple Road, on the edge of the main road south to Brighton, contained a mix of buildings central to communal life (in some cases signifying larger scale connections to surrounding settlements) as well as professionals, a depot and stables^{iv}. These examples of the social and land-use mix of the time demonstrates how the urban edge is more than 'the suburban' and that at any given time it was in a state of flux, part of an emergent process of urbanisation.

Significantly, this variety of activities is continuing today. Structured video observations of a large range of streets around the three centres reveal the diversity of the three cases. These video studies were taken in the middle of the working week during early winter 2008, so they provide evidence of a time of the year when 'business as usual' prevails. Morning activity in Surbiton contains a highly diverse range of age groups commuting into as well as out of Surbiton as well as others *en route* to the variety of land-uses available within the centre. The number of pedestrians walking through the main roads without shopping bags throughout the morning implied that leisure time, rather than simply retail, attracts pedestrians to the central area.

In contrast, South Norwood, which has a less affluent and more urbanised character, has a large amount of activity of commuters and a predominance of singles and young families. The centre suffers (as mentioned above) from it being bisected by a very busy traffic route that is also one of the centre's main roads. This has been found to be a common problem where the most accessible location in a street network develops into being both a route *through* and a route *to* the centre⁴⁶. There is a wider variety of appearance on this street: with some pedestrians dressed in business suits, others in shabby leisure clothes and work overalls. Unlike the bustling nature of Surbiton's streets, no pedestrians were seen to stop at any point during the journey down South Norwood's main street, despite the many shops selling newspapers and snacks.

High Barnet has the most significant flow of people in the morning, but commuters tend to skirt the town centre, moving directly from their homes. School children could be seen at this time of day walking northwards on High Street, however in contrast to South Norwood, these children were unaccompanied. On the quieter residential streets there were many curtains still drawn - indicating the presence of a non-working population. Many pedestrians were walking dogs, highlighting the large number of people that do not commute to London for a 9-5 job. Similar to the case in

South Norwood, the town centre appears to be a route for many commercial lorries which added to the density of traffic.

The afternoon period in Surbiton reveals a circular flow of people moving up and down the main thoroughfare. Here and on adjacent roads, many smartly dressed individuals could be seen taking their lunch break, revealing those employed within Surbiton as well as local residents. Shoppers fill the streets, particularly mothers accompanied by young children. Young couples, dressed in expensive looking clothes carry laptops and there is also the occasional business man or student. On adjacent streets, many appear to be browsing through the area, several were socialising on the street benches, suggesting the wider uses of the town centre by residents. Like in Surbiton, High Barnet has two distinct groups. The first was those out with a purpose; these were often the young mothers and – significantly - those working in the town centre, out running errands or for meetings in local cafes. The other group were in the town centre as browsers, and were often the elderly and the young, who appeared to use the town centre as a way to spend leisure time.

The early evening was probably the busiest time of day in Surbiton as the daytime activities are bolstered by commuters either arriving home or setting off back that way. Parking near the restaurants on Brighton Road suggests popularity is not limited to locals. A similar pattern was revealed in High Barnet, with many casually dressed pedestrians entering the underground station from the centre, suggesting once more that commuters do not dominate this town. The restaurants and bars are also starting to fill up, indicating a night-time activity (albeit less so than in Surbiton). At 5.30pm there was a surge of pedestrian movement on the streets of South Norwood, almost all of whom appeared to be on the way home from work. A significant amount of the workers were also carrying shopping bags, some from chain stores such as the music store HMV and national supermarkets, suggesting a variety of retail needs are satisfied elsewhere. Within minutes, the area was deserted once all the travellers had left the train station. Pedestrians' appearance indicated mixed incomes and mixed age groups highlighting that it is different routines during the course of the day that gives the area a more segregated and divided appearance. While some streets are dominated by those with casual dress, others contain mostly smartly dressed people. This division of flows is a clear reflection of the sharp division of South Norwood, which more than the other two cases has had its original class division - that existed when the railway first arrived - reinforced by decades of differentiated flows and activities along its more localised and more globalised streets⁴⁶ (see figure 2 above).

A questionnaire survey carried out in early September 2008 was equally illuminating about the greater diversity of activity to be found in smaller town centres than might have been expected. Of 199 respondents, 46% mentioned shopping as one or more of their activities, yet, of those, only 16 (a very small proportion, 14%), 'just' shop. This means that 86% of shoppers do something else as a by-product of their shopping (or vice versa). The by-product activity of the largest group of shoppers is going for coffee/tea, followed closely behind by 'window shopping', 'get money', and

'go for a walk'. This illustrates the importance of suburban town centres as creating 'third places' between work and home in which a rich variety of activities overlap in space and time: "Mutuality and resonance, in their many forms, are the stuff of most human exchange. We chat pleasantly about the weather, share a joke we heard with our hairdresser, pass an hour over coffee gossiping with a friend. These mostly unremarkable events soon fade into the dustbin of memory, yet without them life is apt to feel empty and cold."⁴⁷: p. 152.) A focus on town centres as they are commonly considered – namely as foci of high end retail and office space – is retrograde. Our view is that a broader conception of a town centre is needed: one that encompasses a wider area of relatively inter-accessible streets that enable the co-location of the full gamut of non-residential activity, including primary schools, workshops etc. This creates an extensive and varied activity which seeds daily/weekly/periodic movement as well as engagement of individuals with their locality.

Conclusion

The study of the past and present of these three suburban centres in London demonstrates the importance of accepting suburbs as places in their own right, and understanding their role within the wider urban system. These places do not appear high in the hierarchical list of London centres, so their ability to have specific characteristics and independent social life is important in ensuring their relative independence from the centre. It is important to note that they are all within a short journey of 40 or 50 minutes to global centres of arts, performance, commerce and business. Indeed, in the case of Surbiton, the world-renowned Rose Theatre is only a short drive away. They also enjoy strong and efficient transportation links to these centres. The fact that they have not succumbed to the attraction and power of the urban centres, as the prevailing theory would suggest, demonstrates the strength of the identified overlapping routes and flows that have helped these places survive 150 years of social and economic change.

This conference has demonstrated the remarkable fecundity of vocabulary for contemporary suburban built environments: from 'outtowns', 'technoburbs', 'edgeless cities' to 'boomburbs'. These settlement forms, associated with radical decentralisation and the expansion of urban 'sprawl', have been classified as 'post-suburban' and certainly merit serious academic consideration. However, we suggest that this festival of neologism is indicative of an underlying theoretical weakness that inhibits comparative research into suburban space. Terms such as the 'in-between-city' suggest that the latest emerging spatial patterns differ significantly from past urban forms. This is, *pace Wunsch*³⁸ as if to suggest that the modern city stands "*sui generis* without antecedents" and so allows suburban scholars to abdicate their responsibility to understand the relationship between continuity and change (ibid: p. 653). Ironically, such an approach renders current suburban forms incapable of adaptation or change since such 'strange' built forms are seen to be devoid of historical continuity with existing built environments and landscapes. As stated at the start, in the absence of a more substantive conceptual framework, too exclusive a focus on suburban novelty implies a base representation of suburban space as

tabula rasa and therefore elides the question of suburban sustainability – which we define as successful persistence and adaptability through time.

The ability of the suburbs to adapt to the changing conditions over time is a proof for their character as places that need to be understood in their own terms. We therefore propose that rather than the prevalent hierarchical and polycentric view of suburban areas, concepts such as pervasive centrality^v can help the understanding of how the urban landscape is shaped by patterns of movement and consumption at varying distances and for various purposes and over time. Such a shift in understanding is vital to support the future development of urban fringe areas.

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Biography

Dr Laura Vaughan is Senior Lecturer in Urban and Suburban Settlement Patterns at UCL The Bartlett, Faculty of the Built Environment. She has written widely on the spatial form of social life, with a focus on space syntax as a method for fine grain analysis of built form. Dr Mordechai (Muki) Haklay is Senior Lecturer in Geographical Information Science at UCL Department of Civil, Environmental and Geomatic Engineering. He has been working on socio-economic analysis using GIS, novel analyses techniques with GIS and usability aspects of GIS. Dr Sam Griffiths is a Lecturer and Course Director of MSc Advanced Architectural Studies at UCL The Bartlett. His research interests focus on the theoretical and methodological challenges of understanding the historical relationship of built environments with the socio-economic and cultural practices that emerged in them over time. Dr Kate Jones is a lecturer in geography at Portsmouth University. The four authors have recently finished work on a three-year research project 'Towards Successful Suburban Town Centres: a study of the relationship between morphology, sociability, economics and accessibility', www.sstc.ucl.ac.uk.

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ⁱⁱ *Shortest path* refers to the path of least angular deviation or straightest route through the system. The segment model can be analysed taking account of metric distance, 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. This measure is similar to 'betweenness' in network analysis. See Bill Hillier and Shinichi Iida, 'Network and Psychological Effects in Urban Movement', *Lecture Notes in Computer Science* (2005): 475-90.

ⁱⁱⁱ The land uses other than residences were: Surbiton Lawn Tennis & Croquet, Ladies' School; Christchurch vicarage; milliner; dressmakers; newsagent; Knapp Drewett & Sons Ltd.; decorator; hairdresser; corn chandler; fruiterer; farmer; dairyman for Berrylands Farm [the farm is on the other side of the road]; tailor; butterman; fancy repository; post & money order office; jobmaster. Berrylands Avenue was situated on the south-eastern edge of Surbiton at the time.

^{iv} The land uses other than residences were: Assembly Rooms; boys' school; livery stables; solicitor; laundress; cycle & bath chair depot; livery stables; physician & surgeon; Oak Hotel; Congregational Chapel; Surbiton Park school & Lecture hall; wine merchant; hairdresser; butcher; grocer; dairy; draper; tobacconist; Antelope Inn; builder; greengrocer; milliner; boot & shoe maker; grocer; dyer & cleaner; baker; ironmonger; parish clerk; piano tuner

^v Hillier, 2009, 'Spatial Sustainability in Cities' proposes that the "intricate pattern of centres at all scales is potentially a vital component of spatial sustainability, for the very simple reason that it means that wherever you are you are close to a small local centre and not far from a much larger one... centres fit into the natural pattern of movement in the area at different scales, and so each centre will be part of a natural movement pattern at a certain scale... [P]ervasive centrality, mean[s] that the [phenomenon] of centrality [a localised intensification of the grid that coincides with commercial activity] pervades the urban grid in a far more intricate way than has been thought, through, for example, notions of polycentricity." (K01:6)