4

Patterns of Settlement Compared

Nick Green and John Handley

The growth of accommodation

'If you look at populations in southern England, everyone still lives within four miles of churches which had been planted by the 15th century' (Batty, 2001, p636). Thus Mike Batty a few years ago, pointing out that some things don't change much. Things do change of course, often unhurriedly and imperceptibly, but spread over decades and centuries, these changes become profound. This 'deeper continuity' as Batty called it (he borrowed the phrase from George Holmes's *The Oxford History of Medieval Europe*) is crucial to understanding why settlement patterns are the way they are.

Batty made his point at the beginning of a paper which sought using computer simulations to show how, as a consequence of relentless positive feedback operating over timescales measured in centuries, a polynucleated urban landscape could be expected to arise spontaneously (Batty, 2001). Michael Breheny also highlighted the importance of relatively deep-seated changes in live–work patterns, arguing for a subtle approach to policy that aims not to reverse the trend, but simply to bend it (Breheny, 1997; Breheny and Hall, 1999). Other research has come to the same sort of conclusion: our patterns of living and working are showing a consistent tendency to become more dispersed over time and the population of Britain continues to spread itself more evenly (Champion, 1989; Owens, 1992; Hall and Ward, 1998; Rogers and Power, 2000; Hall and Pain, 2006; Parkinson et al, 2006).

In the last half-century or so, one very obvious change has been the rise in car ownership: motoring has long since ceased to be the prerogative of the wealthy, and some have argued that socio-economic factors do in fact correlate more closely to travel patterns (and habits) than land-use characteristics (Stead, 2001). So people are travelling more than they used to, and by different means: trips by car van and taxi increased more than ten-fold from 58 billion passenger kilometres in 1952 to 686 billion passenger kilometres in 2006; over the same period, the percentage of trips by rail almost halved, from 18 per cent to 7 per cent. The decline of bus and coach travel was more dramatic still, from 42 per cent of trips in 1952 to just 6 per cent in 2006 (National Statistics, 2007a). Crucially, this general trend of dispersal is happening within a general context of rapid population growth and a similarly hefty increase in the number of households: the UK's popula-

tion is expected to reach over 70 million by 2031 (National Statistics, 2007b). Lastly, as the title of this book makes clear, the issue of climate change frames many considerations and, it might be argued, lays the emphasis on one of sustainability's 'three pillars' in particular: the environment.

Cities, though, are social and economic entities, as well as interventions that have an environmental impact. And the question of how to build cities that meet the needs of sustainability's 'three pillars' – society, economy, environment – is hardly a new one. Its modern origins lie in the 19th century slum 'city of dreadful night' (Hall, 1988) but if overly high densities were one of the problems then, the lower densities that come as a result of the modern trend to counter-urbanization are surely of vital importance now. Answers won't come easy, for as Ravetz has pointed out, 'a 'sustainable' urban form for any city is a complex balance of many needs and goals, at larger and smaller scales' (Ravetz, 2000, p67).

A prejudgement

Invidious though it may be to prejudge the issue, at least within the narrative structure of this chapter, there is a consensus in the literature about what form a sustainable city would probably take, and it is Ebenezer Howard's original model of the social city (Hall, 1997; Hall and Ward, 1998). This is not to say that this is the only model that can work, and in 1993, Breheny, Gent and Lock opened their report *Alternative Development Patterns: New Settlements* with these words: 'This work was commissioned because of increasing political, public and professional concerns about how best to accommodate new development: its scale, location and consequences' (Breheny et al, 1993).

The literature since the mid-1990s contains little suggestion that much has changed in the decade and a half or so since the publication of this work, which continues to be much-cited in far more recent literature. This is not simply due to a lack of research, although it is certainly the case that in the UK at least, there has been relatively little research into many, although not all of these issues. One exception is the compact city, which has been the topic of considerable debate. But this review reflects the variation in coverage.

The lack of change is also because many of the arguments and issues raised by Breheny, Gent and Lock remain every bit as apposite in 2006 as they were in 1993: the concerns about housing and settlement type and location remain, and if anything have probably become greater; the phrase 'housing crisis' is no longer decried as unnecessary fear-mongering, but can be heard regularly in the mass media; environmental concerns are now in the political mainstream. An initiative by the UK government to develop a series of 'eco-towns' suggests the political will to try to deal with these issues, although overshadowed by global economic crisis. So while settlement patterns may be old ground, intellectually speaking, it behoves us to retread it; for things do change, even if unhurriedly.

Old ground though it may be, a simple route map will doubtless prove helpful. The chapter as a whole compares the three main types of new settlement pattern, and the next section, *The accommodation of growth*, comprises the bulk of it. It takes the form of a literature review which looks at some of the advantages and disadvantages – social, economic and environmental – that come with urban infill, urban extensions and entirely new settlements. The reader will quickly notice that scant mention is made of 'climate change' per se; much of the assessment in the literature tends to deal with 'sustainability', but we can reasonably infer that a more environmentally sustainable approach to doing things (and not just urban planning) will tend to be less damaging in terms of climate change. So a reduction in energy use, or in material use, will reduce carbon emissions, so helping to mitigate climate change. But the other way in which we will have to deal with climate change is by adapting to it, and here, different forms of settlement pattern can make a difference; one example would be in terms of the urban heat island generated by a particular settlement (see Gill et al, Chapter 19). But in the closing section, we shall return to the prejudgement above, in

the light of the evidence reviewed, and with a view to the broad implications for climate change of both different patterns of settlement, and, albeit briefly, systems of settlements.

The accommodation of growth

Broadly speaking, there are three ways in which new households can be accommodated in a particular geographical area: new homes can be built on a site within an existing settlement; new homes can be built on a site that is connected to the edge of an existing settlement; and new homes can be built on a site that is not connected to an existing settlement. Where choices must be made, they will not be purely technocratic, or scientific, or economic, or social, or environmental. They will also be political. Let us look at each approach in turn.

Plugging the holes and filling the gaps

One way of accommodating more households is simply to fill in the holes in existing settlements, a process known as urban infill, or 'intensification'. Since it occurs within the boundaries of existing settlements it tends to vary in scale ranging from the large 'urban village' constructed on an old industrial estate, to the development of large back gardens, or of derelict gaps in the urban fabric (Breheny et al, 1993). It has its advantages and disadvantages. The advantages have the distinctive political overtones of broad acceptability: those who wish to prioritize urban regeneration find it acceptable; those seeking to preserve the countryside also find it acceptable; seemingly derelict land is put to obvious (and acceptable) use. The disadvantages by contrast are more practical in nature, but harder to articulate, based as they are in what may happen: urban areas have a limited capacity to absorb more homes; urban green space may come under increasing pressure to be developed; seemingly derelict land which may in fact harbour a diverse ecosystem comes under threat; town cramming, and the consequent decline in the quality of urban life is a threat; possibilities for mitigating the urban heat island effect may be narrowed; adaptability to climate change may be compromised. The first thing to note, then, is that the arguments are as much political as practical; but there is a seed around which they have crystallized: the notion of the 'compact city'.

Richard Rogers and Anne Power, the chief proponents of the compact city in the UK, claim that 'people gravitate to compact cities because they like its energy, opportunity, diversity and excitement' (Rogers and Power, 2000), but there is plenty of evidence to suggest that this is not always the case. The trend to counter-urbanization identified by Champion (Champion, 1989, 2001) suggests that in Britain, the suburbs remain the favoured form of living environment; an observation, incidentally, made seven decades ago by Rasmussen (Rasmussen, 1982). And while the city centre 'loft living' identified nearly three decades ago by Zukin (Zukin, 1982) does indeed remain a preference for a significant minority, several authors have observed that many of the merits of urban intensification and the compact city have been based on assertion and theory rather than empirical evidence (Breheny, 1992a; Breheny, 1992b; Jenks et al, 1996; Williams, 2000; Williams et al, 2000; Vallance et al, 2005). For example, a study comparing a number of compact city scenarios with a 'trend' scenario in the UK found that shifting to a compact city strategy alone will not necessarily change car use (Simmonds and Coombe, 2000), a finding also noted by Banister (2005). However a compact city strategy need not worsen travel problems such as congestion unless densities are particularly high (Simmonds and Coombe, 2000). David Lock has pointed out that to advocate high-density development specifically to render public transport financially 'viable' is to place above all other considerations the profitability of private transport operators (Lock, 2006).

This is not to say that the compact city is a hopelessly weak idea. Its merits are such that Geurs and van Wee conclude that without it, urban sprawl and the concomitant car use in the Netherlands would be far greater than is currently the case (Geurs and van Wee, 2006). Over and above the fact that urban infill schemes

can help limit urban sprawl, they are likely to bring good access to social facilities in general, and shops in particular (Breheny et al, 1993; Williams, 2000). Of course, an urban infill scheme may well come to an existing residential area, and the question of whether or not existing residents actually regard urban infill as a 'good thing' is not that simple. If the original residents perceive their quality of life to have benefited directly, they are likely to adjudge the urban infill itself as beneficial. Likewise, those who feel that their quality of life has suffered as a consequence of urban infill will project that negative perception onto the principle of urban infill in general (Williams, 2000).

Existing social networks might contribute to a good sense of community (Breheny et al, 1993), but a more circumspect reading of circumstance may be necessary in certain cases (Vallance et al, 2005). In Christchurch, New Zealand, a city whose suburban citizens guard their privacy closely, urban infill was often not well received by nearby local residents who resented the loss of privacy due to new residential buildings which sometimes gave a clear view into their houses. These same residents also felt that their own community was in danger of being damaged by the incomers (Vallance et al, 2005).

Breheny and colleagues were generally optimistic with regard to the potential social mix, which they felt was likely to be good. They also argued that urban infill creates relatively little disruption and this may make it more acceptable to local residents (Breheny et al, 1993). But in the end it all comes down to context, and the evidence suggests a need for sensitivity. In three suburban and predominantly residential areas in London, the social changes wrought by urban infill schemes actually had a negative effect, being perceived as damaging to both the sense of community and to local identity (Williams, 2000). Increasing the breadth of social mix might not be perceived as a 'good thing' in the abstract, but rather as a real threat to the existing community. Intriguingly, suburbanites feel the most threatened by such changes, so considerable sensitivity to the local context is required if such urban infill schemes are not to cause resentment and distrust among existing residents (Williams, 2000; Vallance et al, 2005).

When it comes to reducing the use of the private motor car, urban intensification is just one part of the solution; cultural issues have historically played a strong role too, something that does not look like changing in the foreseeable future (Breheny, 1995; Williams, 2000; Banister, 2005). For while urban infill has high development costs relative to other forms of development, infrastructure costs are relatively low since much of the infrastructure already exists. Consequently, the maintenance costs of urban infill schemes are also likely to be low, since the infill 'plugs in' to existing systems (Breheny, 1992b). Access to employment for urban infill schemes is also likely to be good.

The occasionally confused nature of where the advantages lie came through in a study by Williams of three London boroughs (Camden, an inner-city borough; and Harrow and Bromley, both suburban), all three of which had undoubtedly seen improvements in the local economy during the study period and all three of which were happy enough to attribute these improvements to their urban intensification policies. The problem was that evidence to tie the improvements directly to the policy was actually rather sparse, leading to the disheartening conclusion that 'Determining the extent to which these benefits are a direct result of urban intensification, and how much they are the result of broader economic trends is almost impossible' (Williams, 2000, p44). The potential to regenerate depressed areas must therefore be seen as heavily dependent on context.

Even the environmental impacts come with a health warning. By definition urban infill does not result in loss of land, with the consequent expectation that the loss of natural habitats and the impacts on biodiversity might be expected to be low. But urban areas turn out to be surprisingly rich in wildlife habitats, especially on previously developed land where disturbance followed by neglect initiates natural succession: so urban infill can actually be problematic when it comes to safeguarding urban biodiversity. Indeed, loss of natural habitat as a consequence of urban infill is a distinct possibility: previously

developed sites may have developed their own, possibly fragile ecosystems in the time since they were abandoned to nature (Breheny et al, 1993). Such sites will also play a role in ameliorating the effects of climate change.

When done properly, however, urban infill is for the most part benign. Its Achilles' heel is its potential to mutate into its malign variant, 'town cramming', a clearly undesirable development at a time when 'green-blue infrastructure' is seen as an increasingly important means of mitigating the effects of climate change in the city. For while the higher densities that come with urban infill may make community energy schemes more viable, which would have positive effects with regard to climate change, they also risk exacerbating the urban heat island effect (Shaw et al, 2007).

Furthermore, while urban infill has the advantage that it does not encroach on undeveloped land, the increase in suburb to suburb commuting, noted in Breheny et al (1993), and explored in greater depth by Breheny (1997) and Breheny and Hall (1999), does raise the possibility that the job–housing location balance may be 'wrong for many households'. As noted above, there are also tensions between urban infill and the need to enable cities to adapt to climate change through the provision of urban green space. What this all adds up to is that the potential impacts of urban infill need to be sensitively handled, and the social, economic and environmental contexts of any proposals carefully understood if urban infill schemes are not to do more harm than good.

Not edge city?

Rather than filling in the gaps in an existing settlement, one can of course extend it. Urban extensions, as their name suggests, comprise development that takes place at the edge of an existing settlement, usually on a green field site or other open land. Stimulated by improvements in transit systems over the previous century or so, this has been the favoured form of urban growth (Breheny et al, 1993). It has most commonly found its physical expression in the form of the low-density suburban development, long since identified by Rasmussen as a popular residential environment in the UK, and still in demand to this day (Rasmussen, 1982; Breheny et al, 1993).

Clearly, the extent to which urban extensions can offer access to social facilities will depend on the location and size of the development. There remains the possibility that new residents will have access to existing facilities in the more mature suburbs, but so too is the development of a sense of community dependent on the size and location of the extension. Notions of local identity, in particular, will be tied to overall scale of the development, and a larger development may be better placed than a smaller extension to take on its own identity; the smaller extension is more likely to take its identity from the older adjoining development (Breheny et al, 1993).

Villages, for example, may benefit from the fact that there is a pre-existing community, but as we saw above with urban infill, there is also the risk that this community may resent the intrusion of the incomers: this may be especially the case when the village in question is relatively small. Size will also have a bearing on access to social facilities. Again like urban infill schemes, urban extensions are among the least costly in terms of the provision and use of infrastructure, since they are well placed to take advantage of the existing infrastructure (Breheny et al, 1993).

Urban extensions can 'plug in' to existing amenities to an extent – schools for example – which means that their requirements for land will be less than those of a new settlement designed for a population of similar size and demographic profile. However, very large urban extensions can be expected to require new amenities, and can therefore be expected to use as much land as a new settlement, but the new (off-site) infrastructure required by an urban extension will be substantially less than that required for a new settlement (Breheny et al, 1993).

The potential impact on biodiversity is a subset of a wider range of impacts centred on the formerly rural landscape, although sometimes much modified by proximity to the town (Shoard, 2002). Clearly, decisions about peripheral expansion of settlements need to be made in

a landscape context and then landscape character assessment is well placed to make an effective contribution (Swanwick and Land Use Consultants, 2002). Interestingly, a study by Ravetz and McEvoy, *Sustainable Development of the Countryside around Towns*, found that local authorities had more confidence in applying measures simply to control development, such as green belts, than they did in granting urban extensions (Ravetz and McEvoy, 2002).

Urban extensions also sidestep the unwanted possibilities of either town cramming or loss of urban green space, and may even provide positive opportunities to develop an effective, multifunctional green network, a topic explored in Chapter 19 in this book. For example, the lower density of urban extensions leaves room for green infrastructure which may assist in flood control (Shaw et al, 2007).

Urban extensions can also be expected to provide relatively good access to employment opportunities, offering the choice of ready access to both urban centre and urban hinterland. However, given that commuting from edge to edge of cities remains a growing trend, and that commuting patterns are becoming more dispersed (Breheny, 1997; Breheny and Hall, 1999; Green, 2008), the lack of employment provision in such developments does little to discourage long journeys to work (Breheny et al, 1993), and could be expected to continue the trend of 'edge-to-edge' commuting. Both urban extensions or new settlements that function as 'dormitory' suburbs or towns are obviously not energy efficient, since they encourage rather than discourage travel (Breheny et al, 1993).

Starting from scratch

The most extreme means of accommodating new homes is simply to start from scratch and build a new settlement which will provide a new geographical focus for development. An unambiguous definition of a new settlement is actually rather tricky, but Michael Breheny and his colleagues offered these approximate guidelines as being appropriate at the time they were writing (Breheny et al, 1993, p9):

- A new settlement may or may not incorporate a small settlement that already exists.
- Developers did not typically see a development of less than 350 dwellings as being a 'new settlement'.
- A 'new wave' new settlement could be expected to have between 350 and 5500 dwellings, although there is no reason in principle why it should not be larger.
- The criterion of 'free-standing' must be loosely applied, although some degree of functional separation from other settlements is a requirement.

Having laid down these basic rules, they defined a new settlement as:

> *'A free standing settlement, promoted by private or public sector interests, where the completed new development – of whatever size – constitutes 50% or more of the total size of settlement, measured in terms of population or dwellings'*
>
> (Breheny et al, 1993, p9).

> *New settlements share much in common with urban extensions in terms of environmental criteria, particularly in terms of: loss of land (inevitable); loss of natural habitats (likely); energy consumption due to transport (inefficient if a dormitory town); contribution to 'greening' the existing urban environment (no effect, by definition, although does no harm); and town cramming (again no effect, but does no harm)*
>
> (Breheny et al, 1993).

> *Intriguingly though, the definition set out above leaves open the possibility that in principle a new settlement could have the potential to regenerate depressed areas, although in practice this area would be the pre-existing settlement around which the new settlement is developed and there is little evidence one way or the other to support such an assertion. However, they might offer significant access to employment, as observed in a minority of new settlements in the mid-1990s*
>
> (Breheny et al, 1993).

The most difficult thing to achieve is perhaps the elusive 'sense of community', and although it is certainly the case that access to social facilities can be 'designed in' to a new settlement, the inconvenient fact remains that a 'sense of community' is built up over the longer term, since its successful nurture depends on trust bred through familiarity. Some observers have suggested that a period measured out in years (not months, not weeks) is required for such a sense of community to develop; the point is that a sense of community cannot be instilled overnight (Breheny et al, 1993).

Economically speaking, new settlements, along with urban infill, were likely to have the lowest cost of the end product. However, in terms of provision and use of infrastructure, new settlements were likely to be the most expensive (Breheny et al, 1993). Banister notes that 'evidence from Great Britain shows that large metropolitan settlements tend to be associated with low distance travel and energy consumption' (Banister, 2005, p105). He suggests that this may be because higher population densities widen the range of opportunities for personal contacts and activities that do not require motorized transport. He cautions, however, that diseconomies of scale may occur with very large settlement sizes, when travel distances between home and the urban centre increase. In short, the relationship between settlement size and travel patterns is complex.

If they are big enough, and built in the right place, new settlements can provide all that is required: Breheny and colleagues suggest a minimum of 3000–5000 dwellings, with around 10,000 dwellings being preferable (Breheny et al, 1993). They have considerable potential for reduced energy consumption in terms of space heating and lighting, not least because, being designed from scratch, such things can be built in rather than awkwardly retrofitted. Equally, the urban form itself can be designed in such a way as to mitigate the more onerous effects of climate change; that is, they can be designed with the future in mind (Shaw et al, 2007). But while they may be able to offer good energy efficiency at larger scales, they do require the use of rural land, raising the spectre of the loss of productive agricultural land at a time when food security is becoming an increasingly pressing issue. However, the historical precedents to demonstrate the efficacy of this approach can be found easily enough: Markelius's scheme for the post-war expansion of Stockholm is a classic example (Hall, 1988; Cervero, 1995), while Hall and Ward (1998) offer a blueprint for how the balanced regional growth originally advocated by Howard (1898) may be updated for the present day.

A prejudgement revisited

At the beginning of this chapter, we suggested that Ebenezer Howard's model of the social city was reckoned, generally speaking, to be a sustainable urban form. This need not always be the case, of course. We have seen that in certain instances simply filling in the holes in the urban fabric can do much to reinvigorate a tired metropolis. In rural areas, expanding villages may make the most sense, so that the increase in population can support a wider range of services for both the original and new inhabitants. Other times and places may leave no sensible alternative but to start from scratch on a greenfield site, and to bear stoically the slings and arrows of outraged nimbyism.

A study of energy use in transport in English towns with populations of approximately 100,000, found that as density increases, so energy use tends to decrease (Rickaby et al, 1992), reinforcing the findings of other research on this topic, although it has been pointed out that in theoretical models, the most efficient urban forms tended to include urban concentration plus nearby villages, in a polycentric regional structure (Rickaby, 1987; Breheny, 1992b).

There is an important point here, although it is beyond the scope of this chapter to explore it in the depth it deserves. It is not just the pattern of new settlement in terms of whether it is urban infill, or urban extension, or a completely new and free-standing settlement (even an eco-town) that matters. It is also to do with the resulting system of settlements cast net-like across a region and beyond. How individual settlements interact

with one another with regard, for example, to where people live and work and shop and play, matters to how sustainable a system of settlements is. The edge-to-edge commuting identified by Breheny and Hall (1999) is as much a product of the prevailing economic system, and of the technology that enables it (in this case the automobile) as it is of spatial planning.

New settlements, for all their political and even environmental disadvantages, do have the support of a number of different studies which show that some form of 'decentralized concentration' is 'relatively efficient', since different models suggest that constraints on mobility will tend to encourage people to use those jobs and services that are nearest to them (Owens, 1992). And as Shaw and colleagues have pointed out, new settlements lend themselves to being designed in such a way that they can, as much as anything ever can, be future proofed (Shaw et al, 2007); the necessary green/blue infrastructure and the orientation of streets and buildings that is difficult or impossible to retrofit to an existing settlement can be an integral part of the whole in a new settlement, and to some extent in an urban extension.

The form of a new settlement itself is one part of the solution, then. But patterns of behaviour are every bit as important as patterns of building when it comes to dealing with climate change; some would argue that they are more so. As we have seen, any form of new settlement, be it urban infill, urban extension or a new, free-standing settlement will need compromises, and as has ever been the case, the context is all important. Accommodating new development in a village may be the best solution with regard to climate change, but the original residents may well be most concerned for the survival of the village's social structure when faced with such rapid change. Marshall has argued that cities have tended to grow organically, to evolve (Marshall, 2008) and one might add that they evolve in a particular environment that is physical, social and economic, developing in the process an underlying form and infrastructure that reflects that context. The current context is one of climate change in a post-industrial society, and if the right infrastructure is put in place we can be more optimistic that new settlements might grow and evolve in an environmentally sustainable way. The trick is to achieve this in tandem with social and economic benefits.

Banister (2005, p246) is unequivocal about how to proceed. 'The most sustainable urban form is the city', he says, and

> *… it should have over 25,000 population (preferably over 50,000), with medium densities (over 40 persons per hectare) with mixed use developments in public transport accessible corridors and near to highly accessible public transport interchanges… Settlements of this scale would be linked together to form agglomerations of polycentric cities, with clear hierarchies that would allow close proximity of everyday facilities and accessibility to higher order activities.*

A prescription of urban concentration plus smaller surrounding settlements in a polycentric system all interlinked by high speed public transport may seem thoroughly modern; it isn't of course, as Orrskog and Snickars (1992) pointed out nearly two decades ago. It is actually very close to that set out by Howard over a century ago in his concept of the 'social city' (Howard, 1898). Ebenezer Howard himself would doubtless be gratified to find that he basically got it right. But one wonders if he would be as pleased that people are still arguing about it.

References

Banister, D. (2005) *Unsustainable Transport: City Transport in the New Century*, Routledge, Abingdon, Oxfordshire

Batty, M. (2001) 'Polynucleated urban landscapes', *Urban Studies*, vol 38, no 4, pp635–655

Breheny, M. (1992a) 'The contradictions of the compact city: A review', in M. Breheny (ed) *Sustainable Development and Urban Form*, Pion, London

Breheny, M. (ed) (1992b) *Sustainable Development and Urban Form*, Pion, London

Breheny, M., Gent, T. and Lock, D. (1993) *Alternative Development Patterns: New Settlements*, HMSO, London

Breheny, M. (1995) 'Compact cities and transport energy consumption', *Transactions of the Institute of British Geographers*, vol 20, no 1, pp81–101
Breheny, M. (ed) (1997) *The People: Where Will They Work?*, Town & Country Planning Association, London
Breheny, M. and Hall, P. (1999) *The People: Where Will They Live?*, Town & Country Planning Association, London
Cervero, R. (1995) Stockholm's rail-served satellites', *Cities*, vol 12, no 1, pp41–51
Champion, A. G. (1989) 'Counterurbanization in Britain', *Geographical Journal*, vol 155, pp52–59
Champion, A. G. (2001) 'A changing demographic regime and evolving polycentric urban regions: Consequences for the size, composition and distribution of city populations', *Urban Studies*, vol 38, no 4, pp657–677
Geurs, K. and van Wee, B. (2006) 'Ex post evaluation of 30 years of compact urban development in the Netherlands', *Urban Studies* vol 43, no 1, pp139–160
Green, N. (2008) 'City-states and the spatial in-between', *Town & Country Planning*, vol 77, May 2008, pp224–231
Hall, P. (1988) *Cities of Tomorrow*, Blackwell, Oxford
Hall, P. (1997) 'The future of the metropolis and its form', *Regional Studies*, vol 31, no 3, pp211–220
Hall, P. and Ward, C. (1998) *Sociable Cities; the Legacy of Ebenezer Howard*, John Wiley, Chichester
Hall, P. and Pain, K. (eds) (2006) *The Polycentric Metropolis: Learning from the Mega-city Regions in Europe*, Earthscan, London
Howard, E. (1898) *To-morrow: A Path to Real Reform*, Swan Sonnenschein, London
Jenks, M., Burton, E. and Williams, K. (eds) (1996) *The Compact City: A Sustainable Urban Form?*, E & F N Spon, London
Lock, D. (2006) 'Transport serves the town, not vice versa', *Town & Country Planning*, vol 75, July/August 2006, p203
Marshall, S. (2008) *Cities, Design and Evolution*, Routledge, London
National Statistics (2007) *Transport Statistics Great Britain*, Department for Transport, London
National Statistics (2007) 'National projections: UK population', www.statistics.gov.uk/cci/nugget.asp?id=1352, accessed 7 December 2007
Orrskog, L. and Snickars, F. (1992) 'On the sustainability of urban and regional structures', in M. Breheny (ed) *Sustainable Development and Urban Form*, Pion, London
Owens, S. E. (1992) 'Land-use planning for energy efficiency', *Applied Energy*, vol 43, pp81–114
Parkinson, M., Champion, A. G., Simmie, J., Turok, I., Crookston, M. and Park, A. (2006) *The State of the English Cities* (2 vols), ODPM Publications, London
Rasmussen, S. E. (1982) *London, the Unique City*, revised edition, The MIT Press, Cambridge, MA
Ravetz, J. (2000) *City Region 2020: Integrated Planning for a Sustainable Environment*, Earthscan, London
Ravetz, J. and McEvoy, D. (2002) *Sustainable Development of the Countryside around Towns*, Centre for Urban & Regional Ecology, University of Manchester
Rickaby, P. A. (1987) 'Six settlement patterns compared', *Environment and Planning B: Planning and Design*, vol 14, no 2, pp193–223
Rickaby, P. A., Steadman, J. P. and Barrett, M. (1992) 'Patterns of land use in English towns: Implications for energy use and carbon dioxide emissions', in M. Breheny (ed) *Sustainable Development and Urban Form*, Pion, London
Rogers, R. and Power, A. (2000) *Cities for a Small Country*, Faber and Faber, London
Shaw, R., Colley, M. and Connell, R. (2007) *Climate Change – Adaptation by Design: A Guide for Sustainable Communities*, Town & Country Planning Association, London
Shoard, M. (2002) 'Edgelands', in J. Jenkins (ed) *Remaking the Landscape: The Changing Face of Britain*, Profile Books Ltd, London
Simmonds, D. and Coombe, D. (2000) 'The transport implications of alternative urban forms', in K. Williams, E. Burton and M. Jenks (eds) *Achieving Sustainable Urban Form?*, E & F N Spon, London
Stead, D. (2001) 'Relationship between land use, socioeconomic factors, and travel patterns in Britain', *Environment and Planning B: Planning and Design*, vol 28, no 4, pp499–528
Swanwick, C. and Land Use Consultants (2002) *Landscape Character Assessment: Guidance for England and Scotland*, The Countryside Agency and Scottish National Heritage
Vallance, S., Perkins, H. C. and Moore, K. (2005) 'The results of making a city more compact', *Environment and Planning B: Planning and Design*, vol 32, no 5, pp715–733
Williams, K. (2000) 'Does intensifying cities make them more sustainable?', in K. Williams, E. Burton and M. Jenks (eds) *Achieving Sustainable Urban Form*, E & F N Spon, London
Williams, K., Burton, E. and Jenks, M. (eds) (2000) *Achieving Sustainable Urban Form?*, E & F N Spon, London
Zukin, S. (1982) *Loft Living: Culture and Capital in Urban Change*, John Hopkins University Press, New York