



URBAN SPRAWL IN WESTERN EUROPE AND THE UNITED STATES

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Urban Sprawl in Western Europe and the United States

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Foreword

This book is dedicated to the memory of Mike Breheny, who died suddenly at a very early age in February 2003. Mike wrote the first substantive chapter of this book, and was the life and soul of the party at our conference in Missillac, Brittany, France, in July 2002, where most of these chapters originated. We had known him for only about four years in person (meeting him in Monterey [California], London, Tokyo and Brittany), although we had been admiring his research for almost two decades. He was a charming gentleman of Irish ancestry with a twinkle in his eyes and a wonderful sense of humor (ranging from the intellectual to the bawdy). We had wanted him to stay in Brittany for a few extra days, but he had to run back to London for the cricket Test match between England and India (what kind of Irishman likes cricket? However, he did support the London Irish rugby team.). We miss him badly.

We wish to thank the Borchard Foundation and its Executive Director, Bill Beling, for their support. This enabled us to organize a very successful conference (Bill prefers the term ‘colloquium’), meet old friends and make new ones (especially our French colleagues), and (not least) our last chance to spend some time with Mike.

Chapter 1

Introduction

Chang-Hee Christine Bae and Harry W. Richardson

The urban sprawl issue has received a massive amount of academic research attention in the United States in recent years. It has become the dominant planning issue. The unique feature of this book is that it pays recognition the diffusion of this issue to Western Europe, especially France and the United Kingdom. At first sight, this is surprising. The United States is known for its settlement patterns that emphasize low-density suburban development and extreme automobile development whereas European countries are believed to emphasize higher densities (although low by Asian standards), pro-transit policies and an emphasis on more compact urban development.

Yet, on closer inspection, the differences are not as wide as first appears. In the United States, although far from ubiquitous, many policies have been implemented to reverse, or at least slow down, the dispersion. These include urban growth boundaries, mixed-use and infill projects, smart growth, transit-oriented developments, growth management programs, farmland preservation techniques, concurrency agreements, central city revival strategies, and purchased/transferrable development rights. Their success has been mixed, and has varied significantly by location. On the other hand, in Western Europe, there has been some movement in the opposite direction. Automobile ownership and travel is rising much faster than in the United States. Suburban and quasi-rural lifestyles are becoming more common, although proximity to large towns remains important. Efforts to sustain transit use within or close to cities are stalling and public transport services are declining between the small towns, although bicycling remains popular in some locations. Urban regeneration policies have been quite successful in some places, but not in others.

Thus, there appears to be some convergence in settlement patterns in the United States and Western Europe, somewhat less dispersion in the former

than in the past and a little more dispersion in the latter.

The book is divided into three parts: the first papers focus on the United Kingdom (we wanted to lead off with Mike Breheny's chapter). The second part deals primarily with France, but other European countries are also discussed, while the third part shifts attention to the United States.

Part I The United Kingdom

Breheny expands on the same theme, although with a somewhat different perspective about the impacts of regeneration and sprawl-curbing policies. His argument is that demand pressures on housing are pushing house prices so high, especially in London, that housing is becoming unaffordable, even for the middle class. Obviously, other factors at work such as supply constraints. The situation has become so difficult that new policies have been introduced to subsidize housing for public service workers, such as policemen, firemen and nurses. These effects of anti-sprawl policies on the housing market also have their parallel in the United States, for example, in Portland, Oregon.

Williams' paper outlines the arguments for and against ‘urban renaissance’ (now the preferred term for the older ‘urban regeneration’) in some detail. She points out that in the United Kingdom, there is a disconnect between the government’s policy to promote higher densities and the reported preferences of households to live in suburbs, small towns and rural areas. Although some of the cities have experienced a revival, others have not. Sprawl will not be reduced until people decide that they want to live in central cities again. There is a glimmer of some changes in attitudes about city living in recent surveys, but the overwhelming preference (both revealed and hypothetical) is for suburban lifestyles. This is the same story as in the United States, with the exception that the policies in the United States are even weaker and less effective.

Bendixson’s paper argues that the spatial distribution of population and economic activities in London and South East England is being determined by a combination of strong centrifugal and centripetal forces. London has undergone a revival in the past two decades, influenced by several factors:

- i. the London economy (especially the financial sector) shared disproportionately in the years of economic boom;
- ii. there were several successful large redevelopment projects;
- iii. the continued gentrification of Inner London districts, especially by young professionals; the development of the ‘urban renaissance’ approach, perhaps more in perception than in reality; and
- iv. the restoration of a degree of political power to the local level.

Bendixson raises some issues about whether this revival will continue:

- i. further expansion of the London economy (after its current, possibly temporary, downtown) reinforced by changing preferences in favour of city living;
- ii. alternatively, a strengthening of current preferences for suburban and quasi-rural lifestyles;
- iii. whether the tight housing supply constraints can be overcome; and
- iv. key questions about transport policy (e.g. the long-term effects of the road user charging policy, airport expansion).

These three papers are complementary. The next two are very different. Pennington adopts a theoretical approach to land use interventions, criticizing both planning and the market failures emphasized by neoclassical economics. Debates over the issue of ‘urban sprawl’ in the contemporary planning literature continue to be dominated by the market failure discourse. Critics and supporters of low density urban development alike premise their arguments on the assumption that it is possible to devise and implement an ‘optimal’ urban form where the external costs and benefits generated by private market transactions are successfully internalised. He suggests that this is not possible. Instead, he argues that land use allocations would be much more efficient if the ideas of Hayek held sway: reliance on the ‘spontaneous order’ of individual decision makers under an appropriate institutional framework and the assertion of private property rights. The argument is stimulating, but it is very unlikely that the ideas would ever be implemented, especially in the United Kingdom. So policy interventions to affect the planning of land uses, including efforts to control sprawl, will continue.

Choe's paper adopts a historical approach, explaining in detail the direct influence of the United Kingdom's longstanding Greenbelt policy on the adoption of a similar policy in South Korea over the past thirty years. He also points out some important differences in their design, implementation and enforcement. For example, seven small and medium-size cities in Korea had Greenbelts up to 2001 whereas in the United Kingdom Greenbelts were only created around large metropolitan areas. Also, Greenbelt residents in the United Kingdom were much more supportive than in Korea, possibly because the restrictions and urban growth pressure in the latter case were so tight. Furthermore, the British have had a fully-fledged system of strategic planning and development control that has largely avoided the adverse consequences of leapfrog development so noticeable in Korea.

Part II France and Continental Europe

Prud'homme and Nicot analyse sprawl trends in a 77-city sample of French cities (and their communes). Using a measure that they call 'median distance' (the radius of a circle with one half of the population living inside and the other half living outside the circle), they find that, with the exception of Paris, sprawl increased rather slowly between 1982 and 1999. The paper uses Rennes as a case study, chosen in part because of its dynamic growth and good reputation for inter-commune collaboration and high-quality administration. Although Rennes is slightly larger than the average large city of the 77-city sample (520,000 inhabitants versus 316,000 inhabitants), it was in 1982 fairly typical in terms of spatial structure. Its median distance for population was less than 20 per cent larger than the average. Its median distance for employment was nearly the same. Densities in the centre and in the periphery in Rennes were also quite comparable to the average densities in French urban areas. Yet between 1982 and 1999 Rennes sprawled more than the national average. However, people dispersed faster than jobs in the 1980s; the situation was reversed in the 1990s, suggesting that jobs followed people. Furthermore, the sprawl trends tapered off in the 1990s relative to the 1980s. Throughout, incomes were higher in the periphery than in the core. This suggests that the determinants of sprawl in France are the same as elsewhere, a preference of both households and firms for lower densities made feasible by automobile ownership

Sallez and Burgi point out that French metropolitan areas have experienced the same long-term population trends over the past three-and-a-half decades as in the United States: slow growth followed later by decline in the inner cities while growth rates in both the first and second suburban ring continued to increase. The second part of his paper considers the important case of the Paris Region, *Ile-de-France*. The region's development has been uneven both in terms of population and employment, with significant gains in the western part of the region and losses in the east. The five new towns and La Défense were the major non-core concentrations for jobs, population and housing until the early 1990s. More recently, their growth rates have converged to the regional average. The three new focal points are around Roissy (the Charles de Gaulle Airport area) for transportation logistics, the Val d'Europe (Disneyland) for tourism and commerce, and the Plateau de Saclay for high tech industries. However, in these cases, unlike in the earlier cases, houses have been built not at planned locations very close to these sites but in more dispersed neighbouring places. Finally, this process is compared and contrasted with edge city developments around the larger US metropolitan areas.

Pumain argues that the French case is characterized by the coexistence of compact cities and rural-based peri-urbanization. She suggests that, despite a relatively late start, sprawl has been more evident in France than in many other European countries, in part because of its larger size and historically lower densities. She also argues the French experience reflects worldwide trends associated with the globalisation of cultural standards and technological diffusion, especially in transportation. A major step in the late 1990s has been new legislation for urban governance and urban renewal in reaction to increasing public consciousness about the physical and social consequences of urban sprawl. Specific regulation means are now available for a better control of the process. Finally, she warns against assuming that future urban forms in France and the rest of Europe will closely mimic the American pattern.

Although *Huriot* also discusses the distribution of population, his prime focus is employment. He points out that the geographical distribution of jobs is very different in large French cities from those in the United States. Whereas most large US metropolitan areas can be described in terms of relatively weak Central Business Districts (CBDs) and rapidly growing edge cities, in France the centre is much stronger and the suburban centres can

better be named as poles rather than edge cities. He calls the French urban structure the Monocentric Specialized Multipolar (MSM) hypothesis. He shows that the centre specializes in high-order services including producer services whereas the peripheral poles focus on lower-order services or industry. Also, some of these poles tend to be specialized rather than diversified. The strength of the centre is reinforced by its richer array of amenities than found in almost all American city centres. He also demonstrates that the *villes nouvelles* policy that began in the 1970s has been one of the more successful elements in the deconcentration process, especially around Paris.

Bailly draws a sharp distinction between France and Switzerland. Using the example of the location of producer services, he suggests that both centralization and decentralization forces are strong in Switzerland while French cities (especially medium-size cities) have had much more difficulty maintaining their cores. The Swiss cases (Geneva, Lausanne, and Zürich) contrasts sharply with France (where we find a strong movement of back-office activities to peripheral areas). CBDs in Switzerland have remained strong and continue to experience growth. Urban sprawl for service activities is concentrated in a few nodes close to the freeways just outside the main cities. Even for housing, the pattern is similar: old cities still attract people, and if there is a suburbanization process, it is concentrated in the vicinity of villages or middle size cities, well linked to CBDs. There is no urban sprawl in the countryside. He argues that the main reason for the difference in spatial performance is the importance of local autonomy and decision making in Switzerland compared to France's centralized national policies that fail to guide settlement structures at the local level. It remains to be seen whether the recent planning reforms in France will make a difference.

Sellers focuses on the governance of sprawl in 12 European countries plus the United States and Canada. He analyzes this issue in the context of past historical trends since the nineteenth century that vary widely among countries: the rate of growth and the number of large cities, the population shares of rural areas and very small towns, agriculture's share in the economy, and the self-employed. A key argument is that each country's governance system (especially the distribution of power between central and local authorities) has largely been determined by historical forces, and that these largely determine current policies towards settlement patterns in general, and sprawl in particular. However, despite differences in the degree

of local control (especially limited in France, at least before the 1990s), there has been some convergence since World War II. Nevertheless, the degree of central control remains strong in some countries, such as the United Kingdom and France.

Part III The United States of America

The third section of the book turns to the United States. *Richardson and Gordon* examine population and employment trends over the past thirty years and conclude that suburbanization and exurbanization trends remain dominant, although there are variations according to metropolitan size. They also examine some issues related to the sprawl debate (such as New Urbanism, smart growth, and private communities). Like Pennington, they favour the Hayekian solution. However, trends in the United States are moving in the other direction (towards more command-and-control planning), so moving to private communities (an ‘exit’ option) may become more attractive to those interested in preserving property rights.

Nelson draws up a taxonomy of different types of ‘urban containment’ and compares a sample of contained cities with a sample of uncontained cities (contained cities are either contained naturally [e.g. by topographical barriers] or as a result of the implementation of anti-sprawl policies). He finds that the contained cities consume less land relative to population, experience small percentage declines in solo commuting and in vehicle miles travelled (compared with modest increases in the uncontained cities), have larger reductions in racial segregation, but there are no differences in per capita income between the two groups.

In the next paper, *Miller* examines one case study, the Washington State Growth Management Act passed in 1990, in some detail. He shows that growth management strategies in Washington include some innovative approaches compared with its better known (in the planning world) next door neighbour, Oregon. The innovations include: concurrency agreements (requiring infrastructure to be in place before permitting), urban growth areas (this idea was adapted from Oregon’s Urban Growth Boundary concept), the purchase of development rights and the transfer of development credits, exemptions from single family home zoning to permit accessory units, buffers along streams and rivers to protect endangered species of salmon, and

allowing NGOs (non-governmental organizations) to purchase and manage forestry land on the urban fringe. Also, Washington has adopted a somewhat more flexible approach than Oregon, giving more opportunities for inputs and adjustments at the local level.

Bae addresses a controversial issue: whether immigration contributes to sprawl in the United States. The anti-immigration argument is: population growth is a major contributor to sprawl, immigration is a primary source of population growth, hence immigration leads to sprawl. Her analysis of the 20 largest metropolitan areas shows that this is false. Increasing land consumption per capita is a more important factor than population growth. Immigration is associated with high not low densities, and the high-immigrant metropolitan areas are the least sprawling. Instead, sprawl is more closely associated with low land prices and higher incomes.

The *Bertaud-Richardson* paper shifts to the other end of the country for a case study on Atlanta, Georgia, a city notorious in the United States for its extreme sprawl. Planners and policymakers in Atlanta hope to reverse this process via public transit programs, especially by expanding MARTA's (The Metropolitan Area Rapid Transit Authority) rail system. The paper demonstrates that this is a pipedream because Atlanta is too spread out. He uses Barcelona, Spain, as a comparison example: for Atlanta to achieve the public transit share of Barcelona would require hundreds of billions of dollars of investment and a 3,400 mile rail system. The case of Portland, Oregon, is also examined. At first sight, this appears a more favourable case with a regional planning agency and a growth management regime. Yet the prospects for much public transit expansion remain bleak. In the United States, neither the strategy of densification to promote transit nor increasing transit supply to promote higher densities will work, because the density threshold that might facilitate this is so much higher than current prevailing densities.

In the final paper, *Crane and Chatman* undermine the planner's mantra that sprawl results in longer commutes and more vehicle miles travelled. On the contrary, using American Housing Survey data for 1985 and 1997, and focusing on employment, they find that more decentralization is associated with shorter rather than longer commutes. However, there are sectoral differences: this result is more pronounced in service sectors, while manufacturing workers (and, to a lesser extent, financial workers) tend to

have longer commutes. However, this is easily explained by the geographical concentration of manufacturing firms in a limited number of industrial zones.

Summary

This book suggests that sprawl is not solely an American phenomenon; it is alive and well in Western Europe too. Also, United States planners have misunderstood what is happening in Europe, basing their judgments more on the compactness of the older European cities and the excellent intercity public ground transit service rather than on the statistical trends or on what is happening away from the large metropolises and the tourist towns. Furthermore, we need to be cautious about the influence of public policies. Despite strong anti-sprawl and pro-urban-centralization policies in many European countries, automobile use continues to rise much faster than in the United States and many households continue to choose suburban or quasi-rural homes. However, despite the major differences (e.g. the geographical size of countries, historical forces, current automobile ownership rates, travel mode shares, housing styles), there is more convergence than divergence between the United States and Western Europe.

PART I

THE UNITED KINGDOM

Chapter 2

Sustainable Settlements and Jobs-Housing Balance

Michael Breheny

Introduction

A reduction in the number and length of commuter trips, seen as one of the objectives of sustainable development, has become an important element of the development plan process. One way in which local planners are seeking to achieve fewer and shorter commuter trips is by attempting to create an approximate numerical balance between homes and jobs. Indeed, policy guidance issued by the central government in the UK is to advise local authorities, at both the county and district level, how to work towards achieving a balance between employment and housing levels (DoE 1996 para 5.24). The consequence is that many structure and local plans now contain policies intended to create what is often referred to as ‘homes – jobs balance’ in settlements. This chapter investigates whether balanced settlements are associated with higher degrees of journey to work self containment in England. An earlier paper (Breheny, Foot and Archer, 1998) used district councils in England as the basic unit of analysis. Here, the focus is at the lowest level of geographical area for which data are readily available from the 1991 Census; that is, English census wards.

Using indices developed to measure balance and self containment, this chapter continues to test the hypothesis that simply achieving a numerical balance between homes and jobs, or more precisely, between resident workers and jobs, will result in a reduction in either the number of work trips or work trip lengths.

Planning Policy on ‘Balance’

The pursuit of policies to achieve self containment by local planning authorities is in accordance with the advice currently being issued by the Department of the Environment, Transport and the Regions (previously Department of the Environment). The advent of self containment advice into policy guidance can be traced from 1992. Breheny, Foot and Archer (1998) review the development of Government advice, from PPG12 in 1992 (DoE, 1992) through to the household growth green paper of 1996 (UK Government, 1996). A consistent thread through this advice is the need to develop ‘balanced’ communities. The earlier paper also reports on a survey of English structure and local plans, which identified a high rate of adoption of this advice. Breheny, Foot and Archer (1998) summarized the findings of the survey as follows:

- Of the development plans in the sample, 81 per cent of structure plans and 47 per cent of local plans are seeking to achieve some degree of self containment.
- The Gloucestershire structure plan, for example, directly links housing and employment forecasts by district in an attempt to reduce commuter travel.
- A greater percentage of structure plans are seeking to achieve self containment across their areas than are local plans.
- Local planning authorities appear to have been seeking to achieve self containment since before the publication of PPG13 in 1994 (DOE, 1994).
- Some local authorities are seeking more than 50 per cent self containment in major new developments (that is, more than half of resident workers to work in the new development) (for example, Hampshire, Bedfordshire).
- As local plans have to be in conformity with structure plans, as more local plans are prepared the quest for self containment will increase (for example, Berkshire – Newbury, Hertfordshire – Dacorum).
- Some local authorities are actively reducing the supply of land for either housing or employment to achieve a greater degree of self containment (for example, Leicestershire, Dacorum, Chiltern).
- The proximity of large cities like Bristol and London can lead to high levels of out-commuting from nearby districts (for example,

Woodspring, Thurrock, Epping Forest, Sevenoaks, and Broxborough), and most of these districts are seeking to provide more jobs locally in order to reduce out-commuting.

- Some local authorities acknowledge that it is unrealistic to plan for total self containment (for example, Cambridgeshire, Berkshire).
- Self containment can still lead to complex patterns of commuter journeys (for example, Northavon).
- Although striving for self containment, many local authorities admit that the skill mis-match will prevent total self containment (for example, Newbury, South Buckinghamshire, Epping Forest, Sevenoaks, and Broxborough).

Despite reservations on the part of some local authorities, there is a widespread belief that a balance of jobs and resident workers will induce greater self-containment. There is no indication from the survey that this belief varies between types of locality in any systematic way. The question of self-containment is also important in the debate over new settlements. Although very few new settlements have been built, largely because of local opposition, there is a view that they will inevitably play a role as the question of locating 4.4 million new households is addressed. In order to meet the requirements of sustainable development, proposers of new settlements have been at great pains to point out that their proposals involve a balance of households and jobs (for example, Hussell, 1994). Again, the assumption is that this will reduce commuting.

Areas and Data

In principle, the data required to test the balance proposition are simple:

- Data on balance, which provide a ratio between the number of jobs and the number of resident workers in a settlement; and
- data on self-containment, which provide some index of travel behaviour for a settlement.

In practice, it is a little more complicated. There are two related problems. The first concerns the appropriate boundaries of settlements, and

the second concerns the availability of data for a range of settlement sizes.

The Boundary Problem

Empirical analysis of balance or self-containment presents a problem because these notions are dependent on the spatial unit chosen. Any measures derived will change as the boundaries of the spatial unit used are changed. For example, self-containment or balance will appear to be higher if generous boundaries are drawn around a town or city.

The problem is compounded here because the aim is to address the issues for a range of settlement sizes, from rural villages up to metropolitan cities. Thus, appropriate boundary definitions have to be found across this range. There is no neat answer to this problem. The best rule of thumb is probably to define relatively free-standing areas that enclose whole residential and employment communities, where it might be assumed that a large proportion of local residents might find work. With villages and small towns in rural areas it is relatively easy to identify such free-standing settlements. It is also relatively easy with large, geographically distinct cities. It is hardest with previously free-standing towns that have joined together to produce a contiguous urban agglomeration.

This problem puts a premium on any measures that are less sensitive to boundaries.

The Data Problem

The data used to test the notion of balance come from the UK 1991 census and are of two types:

- Commuting data: the number of people living and working in a settlement; the number of people living in but working outside; and the number of people living outside and working in a settlement. These data can be taken from two sources in the census: from a single table in the published national workplace tables, and from two tables in the Special Workplace Statistics (tables WA3 and WB3); the latter being accessed online from the MIDAS system.
- Trip length data: measured as the mean or median trip length of resident workers and of those commuting into a settlement. These data are taken

from one source in the census: two tables in the Special Workplace Statistics (tables WA4 and WB4); again being accessed online from the MIDAS system.

These two data types do not match neatly onto the requirement identified above for balance and self-containment indices. As will be seen, each of these two data sets can be used to provide indices of both balance and self-containment. The settlement boundary problem posed above is further compounded by the fact that published data are readily available only for defined spatial units – census wards and local authorities at district and county levels. Data for any other spatial units have to be created.

The aim is to test the proposition that a balance of resident workers and jobs induces self-containment for all urban sizes. In practice, the range of the urban hierarchy is represented by four types of area (Census wards, small towns, district council areas and metropolitan counties). This chapter focuses on the first, most disaggregated of these spatial units. Data on census wards are readily available. Such wards typically have populations of up to 6,000 in rural areas and rather more in urban areas. In rural areas, at least, wards approximate in many cases to villages. Analysis is carried out for wards in six English counties (Berkshire, Gloucestershire, Lancashire, Norfolk, Nottinghamshire, and Wiltshire). These counties were chosen to represent a range of wards from highly (but not metropolitan) urban to remote rural areas. Indices can be calculated for the full set of wards, or for any subset of the total; such as purely rural wards, or rural wards containing single free-standing villages or small towns. The ward data are from the Special Workplace Statistics, which give details of both commuting patterns (tables WA3 and WB3) and trip lengths (table WA4 and WB4).

This chapter reports on analysis carried out at the ward level only. Analysis is undertaken on data for all the 1,152 wards from the six counties of Berkshire (125 wards), Gloucestershire (145 wards), Lancashire (304 wards), Norfolk (230 wards), Nottinghamshire (191 wards) and Wiltshire (158 wards).

Indices of Balance and Self-Containment

Given that the aim here is to test the proposition that a high level of jobs/resident workers balance induces work trip self-containment, two sets of indices are required: measuring balance and self-containment respectively. Two indices were developed for the former case and five for the latter. The indices presented here have been derived from consideration of both appropriate measures in principle and what is possible in practice because of the limitations imposed by data sources.

Balance Indices

Balance indices are devised to reflect the policy concerns of local authorities. Thus, they have to relate to the ratio of ‘homes and jobs’, as the planners tend to characterise it. A more useful ratio, however, is between resident workers and jobs. It is this balance between the number of people seeking jobs locally and the local availability of jobs that is the issue. Census data on jobs and resident workers is readily available, and hence ratios are easy to calculate.

Index 1: Balance This is measured as the number of jobs available in an area per resident worker. Slight variations on this could be used. For example, economically active persons could be substituted for resident workers. Resident workers are used here because it is the measure available in the Census Special Workplace Statistics. The balance index values are classified here into:

‘balanced’ wards, where values are within 10 per cent of perfect balance (0.9-1.099) – this is regarded as the degree of balance assumed to be desirable by national and local policies;

- ‘job-rich’ wards, where there is 10 per cent or more surplus of jobs over resident workers; and
- ‘resident-rich’ wards, where there is a 10 per cent or more surplus of resident workers over jobs.

Occasionally in the analysis below, reference will be made to extreme job-rich or resident-rich areas. In these cases, wards will be identified which fall at the extremes of the distribution of balance values.

Index 2: Alternative Balance This tries to measure variation from perfect balance. It takes the absolute difference between jobs in the area and resident workers (thus expressing all values as positive), and divides this by the sum of jobs and resident workers. Subtracting the result from 1 gives a value

which is lower as the variation between jobs and resident workers rises. Perfect balance gives a value of 1.0. This index is useful because it allows an analysis of the possible consequences of degrees of variations from perfect balance.

Self-Containment Indices

While balance measures simply reflect the ratio between resident workers and jobs, self-containment indices are based on actual trip behaviour. The first two self-containment indices described below are derived from data on the levels of in and outcommuting, while the remaining three indices are based on work trip lengths.

Index 3: Independence This is an index used by Cresswell and Thomas (1972) and by Breheny (1990). It is measured as the number of work trips that are internal to the area, divided by the sum of the work trips out and the work trips in. Thus, the larger the number of internal trips relative to movements out and in, the greater will be the value of the index and the greater the degree of self-containment.

Index 4: Retention This index is calculated by dividing the number of internal trips by the sum of the internal trips and the trips going out of the area. Thus, it ignores trips into the area. It gives a measure of the proportion of resident workers who can find jobs locally. This might be an index of interest to local authorities who are concerned about lack of local jobs for local residents.

Index 5: Residents' Average Trip Length This index is calculated by deriving the average work trip length of resident workers, measured as the median or the mean. The SWS give the number of resident workers (or alternatively, workers) by categories of trip length, in six categories ranging from 0-2 kilometres to 40+ kilometres. This is done for each ward, for the full set of wards, and for all wards in each county. Median and mean values are then calculated for each case. (Note: the sum of work trips in the SWS (WA3) table does not add to the sum of work trips from the other (WA4) tables used in Index 6. This is because fixed workplace, workplace not stated and workplace outside UK are excluded. When these are included, the figures do match).

Index 6: Workers' Average Trip Length This index is identical to that given in Index 5, except that it relates to trips into an area, rather than trips out. This index relates to people who work in an area (including residents), rather than those who reside in the area (but some of whom work outside). Again, this index can be calculated using mean or median trip lengths.

Index 7: Weighted Average of Residents' and Workers' Average Trip Length This index takes a weighted average of the values of indices 5 and 6. This index is used to gain an overall value of travel activity related to an area. It is possible, for example, that low values of index 5, which seem to indicate low levels of travel by residents of an area, could still be associated with high levels of travel by in-commuters. Index 7, by taking a weighted average of in and out-commuting distances, should overcome this problem (we might calculate an average of the two as an alternative index). This index can be calculated for mean or median trip lengths.

These indices do not necessarily exhaust all the possible ways of measuring both balance and self-containment. Other variants have been considered. However, they do provide a sufficient degree of variety to allow propositions about the relationship between balance and work trip behaviour to be tested.

This paper focuses on the key indices: 1, 4, 5 and 6.

The Analysis

The analysis aims to assess the degree of association between the balance index and those indices representing self containment – that is, those indices for retention, for out commuting and for in commuting. Analysis will be presented firstly for all 1,152 wards. It will then focus in on subsets of these wards that have high balance index values and high self-containment index values.

All Wards: Balance and Retention

The mean value of the Balance index for all 1,152 wards is 0.986. As might be expected the majority of wards are largely residential in character, while the minority are 'job-rich' employment centres. Some 764 wards (66.32 per cent) are 'resident-rich', while 281 wards (24.39 per cent) are 'job-rich'

and 107 wards (9.29 per cent) have almost equal numbers of jobs and resident workers ('balanced' – within 10 per cent of a Balance value of 1.0). There is a long tail of a few wards with index values greater than 1.2 – wards where there are more jobs than workers.

The Retention index shows the proportion of resident workers in a ward who work in the same ward. The upper limit for the Retention index is 1.0 – when all resident workers live and work in the same ward. The mean Retention value for all 1,152 wards is 0.188 suggesting that in the six counties on average only 18.8 per cent of workers live and work in the same ward. In 614 wards (53.3 per cent), fewer than 20 per cent of the resident workers are employed in their ward of residence. Indeed, only 34 wards (2.9 per cent) retain more than 50 per cent of their workers. The Retention values in most wards are poor. There is a long tail of a few wards with index values greater than 0.3 – wards which retain more than 30 per cent of their resident workforce. Clearly, although about 10 per cent of wards have almost equal numbers of workers and jobs, most workers do not live and work in the same ward. Few wards approach any degree of self-containment as demonstrated by the Retention index, and hence there is a significant amount of commuting between wards.

All Wards: Balance and Trip Lengths

Table 2.1 shows the frequency distribution for out-commuting median and mean trips for all 1,152 wards. The median out-commuting trip length for all 1,152 wards is 4.01km and the mean out-commuting trip length for all 1,152 wards is 8.38km. 661 (57.38 per cent) wards have longer out-commuting median trips than the median for all 1,152 wards and 612 (53.13 per cent) wards have longer mean trips than the average for all 1,152 wards.

Table 2.1 Frequency distribution for out-commuting trip lengths in the UK

Out-Commuting Distance (km)	Median value for 1152 wards = 4.01km	Mean value for 1152 wards = 8.38km
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Median trip length	Mean trip length
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Frequency	%	Frequency	%
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> 17.00			2	0.17
16–16.99			6	0.52
15–15.99			15	1.30
14–14.99	2	0.17	22	1.91
13–13.99	6	0.52	42	3.65
12–12.99	20	1.74	84	7.29
11–11.99	28	2.43	92	7.99
10–10.99	23	2.00	122	10.59
9–9.99	35	3.04	136	11.81
8–8.99	59	5.12	152	13.19
7–7.99	109	9.46	133	11.55
6–6.99	104	9.03	168	14.58
5–5.99	109	9.46	108	9.38
4–4.99	168	14.58	49	4.25
3–3.99	222	19.27	21	1.82
2–2.99	121	10.50		
1–1.99	143	12.41		
< 1.00	3	0.26		

The distribution of the mean out-commuting trips shows the majority of trips to be between 5km and 10.99km, with a short tail of a few wards with

trips of less than 5km and an elongated tail of a few wards with long out-commuting trips. Only in 70 (6 per cent) wards do resident workers travel, on average, less than 5km to work.

Table 2.2 shows the frequency distribution for in-commuting median and mean trips for all 1,152 wards. The median in-commuting trip length for all 1152 wards is 3.92km and the average in-commuting trip length for all 1,152 wards is 7.93km. Some 344 (29.86 per cent) wards have longer median in-commuting trips than the median for all 1,152 wards and 305 (26.48 per cent) wards have longer average in-commuting trips than the average for all 1,152 wards. The distribution of the average in-commuting trips shows that the majority of trip lengths are between 3km and 8.99km and again there is an elongated tail of a few wards with long in-commuting trips. Here, the proportion of workplaces attracting people from within an average 5km radius is much higher: 312 wards (27.08 per cent).

Table 2.2 Frequency distribution for in-commuting trip lengths in the UK

In-Commuting Distance (km)	Median value for 1152 wards = 3.92km	Mean value for 1152 wards = 3.92km	
Median trip length	Mean trip length		
Frequency	%	Frequency	%
>46.00	1	0.09	
30–39.99			1 0.09
20–29.99			2 0.17
19–19.99			0.09
16–16.99			0.09
15–15.99			2 0.17
14–14.99			4 0.35

13–13.99		0.09	16	1.39
12–12.99	1	0.09	10	0.87
11–11.99	3	0.26	25	2.17
10–10.99	6	0.52	44	3.82
9–9.99	2	0.17	82	7.12
8–8.99	17	1.48		1089.38
7–7.99	16	1.39		17214.93
6–6.99	51	4.43		17915.54
5–5.99	71	6.16		19316.75
4–4.99	162	14.06		16214.06
3–3.99	255	22.14		1139.81
2–2.99	217	18.84		28 2.43
1–1.99	310	26.39	8	0.69
<1.00	39	3.39		0.09

The logic of the balance policies being promoted by Government and adopted by many local authorities suggests that: Balance and Retention indices should be positively associated; Balance and Out-Commuting indices negatively associated; and Balance and In-Commuting indices positively associated. The third of these relationships is perhaps the less obvious. However, a positive sign would be expected if high Balance values – reflecting ‘job-rich’ areas – are associated with long in commuting trips. Table 2.3 shows the correlation coefficients for the Balance index against the three self containment indices.

Table 2.3 Correlation coefficients for 1152 wards

	Retention	Out-commuting length	median	trip length	In-commuting length	median	trip length
Balance	0.318	-0.268			0.292		

In practice, the Balance/Retention coefficient is positive but very weak, with an R^2 of 0.1009. As the Balance index values increases (i.e. the number of jobs increase), then more workers are retained within these ‘job-rich’ ward, but to an insignificant degree. The correlation coefficient between Balance and the Median Out-Commuting Trip Length is negative, as expected, but is again very weak. Likewise, the In-Commuting Median Trip Length is positively associated with Balance, but the relationship is again not significant.

Table 2.4 Summary of analysis for wards in the six counties

Count	Berks	Glos	Lanes	Norfolk	Notts	Wilts
No. Wards in count	124	145	304	230	191	158
Balance mean	1.0029	0.9772	0.9691	0.9818	1.0117	0.9702
%wards ‘in-balance’	7.26	7.59	9.877	9.13	11.52	8.86
Retention mean	0.1595	0.2150	0.1775	0.2350	0.1590	0.2165
%wards with Retention>0.5	1.61	4.83	1.97	5.23	0.52	3.79
% wards with Retention<0.1	25	15.17	22.37	11.3	27.23	14.56
Out-commute median (km)	4.80	3.85	3.58	4.02	4.26	3.68
Out-commute mean (km)	11.00	8.22	7.36	8.31	7.60	8.58
%wards with out-commute median lower than count median	47.58	37.24	48.03	33.48	41.36	36.08
In-commute median (km)	4.72	3.73	3.40	3.93	4.34	3.51

In-commute mean (km)	10.71	7.58	6.65	7.89	7.48	7.94
wards with in-commute median-lower than median	66.94	69.66	66.78	69.13	72.25	66.46
Balance/Retention correlation	0.4163	0.2629	0.4048	0.2685	0.4537	0.3276
Balance/Out-commute correlation	-0.1079	-0.2683	-0.2804	-0.3343	-0.3080	-0.3330
Balance/In-commute correlation	0.2110	0.2861	0.3779	0.2759	0.4551	0.2755
Balance/Retention: R ²	0.1733	0.0691	0.1638	0.0721	0.2058	0.1073
Balance/Out-commute: R ²	0.0116	0.0720	0.0786	0.1118	0.0948	0.1109
Balance/In-commute: R ²	0.0445	0.0819	0.1428	0.0761	0.2071	0.0759

These average index values produced for all wards are available for the six counties individually, allowing comparisons to be made. [Table 2.4](#) shows the results. Overall, index values for each county are not significantly different. Norfolk has the highest average retention level, with 23.5 per cent of resident workers working in the ward of residence. Gloucestershire and Wiltshire also have relatively high levels. All three counties have the highest proportion of wards with high retention levels and the lowest proportion with very low retention levels. Thus, it might be assumed that the more rural areas have higher retention. There is no evidence, however, that these higher levels of retention result in shorter out-commute trips. Indeed, the county with the shortest median out-commute trip length is Lancashire, which has a relatively poor retention level. It is likely that accessibility to job opportunities is an important factor here – but it is difficult to discern a pattern. Areas with very large numbers of jobs at medium to distant locations, and also with good motorway connections, may exhibit relatively long out-commute trips. Berkshire is the obvious case. But, the same might be said of Lancashire, which has relatively short trips. Residents in rural wards

who travel out of wards with good local retention levels, may have to travel considerable distances to gain access to large numbers of jobs; thus pushing up average trip lengths. Norfolk fits this picture, with high retention and high trip lengths; but Gloucestershire and Wiltshire, with high retention but relatively low trip lengths, do not.

The signs on the correlation coefficients in [Table 2.4](#) are all as might be expected in all counties, but as with the overall analysis, none are significant.

The analysis of all wards in the six counties shows, then, that the propositions posed earlier are just detectable, but to a degree that is insignificant. Overall ‘homes jobs’ balance – a major aim of the development plan system – does not seem to induce greater work-trip self-containment.

It is difficult, then, to detect any pattern between balance and self-containment in the broader analysis. But perhaps a more focused analysis will show clearer patterns. The analysis that follows focuses on subsets of the 1,152 wards. It looks firstly at wards that are approximately in balance, and secondly on those that have high degrees (and for trip lengths, also low degrees) of work trip self-containment:

- i. *Balanced wards*: wards with balance values within +/- 10 per cent of perfect balance. The analysis looks at the retention levels and work trip lengths of this subset of wards.
- ii. *Self-Contained wards*: Separate analyses are presented for
 - *High Retention wards*: wards with high retention values of 0.5 and more (i.e. those wards in which more than 50 per cent of resident workers work in a ward). Here, the trip length characteristics of these wards are considered.
 - *Low and High Out-Commute Trip Lengths*: the characteristics of the 10 per cent of wards with the highest and lowest median out-commute trip lengths are considered.
 - *Low and High In-Commute Trip Lengths*: the characteristics of the 10 per cent of wards with the highest and lowest median in-commute trip lengths are considered.

High Retention wards: wards with high retention values of 0.5 and more (i.e. those wards in which more than 50 per cent of resident workers work in a ward). Here, the trip length characteristics of these wards are

considered. Low and High Out-Commute Trip Lengths: the characteristics of the 10 per cent of wards with the highest and lowest median out-commute trip lengths are considered. Low and High In-Commute Trip Lengths: the characteristics of the 10 per cent of wards with the highest and lowest median in-commute trip lengths are considered.

Analysis of ‘Balanced’ Wards

The analysis above related values on the balance index to values on the self-containment index. Strictly speaking, the full range of balance index values measures the degree to which wards have a job surplus or not. High balance values indicate high job surpluses. The real concern here is with that range of balance index values that suggest that the number of resident workers in a ward and the numbers of jobs in that same ward are in approximate numerical balance. Given the current concern with achieving ‘homes job’ balance, an obvious task here is to analyse those wards in this data set which come close to meeting this criterion. If balancing numbers of jobs and homes is to achieve higher work trip self containment, then these wards should have high Retention values and low trip length values. ‘Balanced’ wards are identified here as those with balance values between 0.9 and 1.099; that is, within 10 per cent of perfect balance.

Table 2.5 Distribution of 107 ‘Balanced’ wards between the six counties

County	# of ‘balanced’ wards in each county	Wards in each county	% of county wards with ‘balance’
Berkshire	9	124	7.26
Gloucester	11	145	7.59
Lancashire	30	304	9.87
Norfolk	21	230	9.13
Notts	22	191	11.52

Of the 1,152 wards in the sample, 107 wards (9.29 per cent) have Balance index values within this range. [Table 2.5](#) shows the distribution of these ‘balanced’ wards between the six counties. This is no significant difference between the counties in the number of ‘balanced’ wards. The most rural county, Norfolk, which might be expected to have more local jobs, does not have a particularly high proportion of balanced wards. Berkshire, Gloucestershire and Wiltshire are counties with good communication links to areas with high employment choice. Therefore, the relatively few ‘balanced’ wards in these counties might be expected.

Looking geographically at these 107 wards:

- 15 (14 per cent) are either coastal or in the hinterland of the coast, perhaps suggesting that there may be limited employment choice in surrounding zones;
- 38 (35.5 per cent) are in remote, rural areas (i.e. either in fen, fell, forest, down land, common, forest, Cotswold or moorland country), and therefore there is limited access to employment choice in surrounding zones;
- Surprisingly, 48 (44.9 per cent) are on the outskirts of towns or large conurbations, where there are employment opportunities within easy commuting distances; and
- 6 (5.6 per cent) appear to have no obvious landscape, infrastructure or proximity characteristics.

The majority of balanced wards (49.5 per cent) are in remote or coastal areas. Similarly, the analysis at the district level (Breheny, Foot and Archer, 1998) found that the majority of balanced districts are either coastal or remote, with little employment choice close by. Perhaps the implication here is that in remote areas, poor transport infrastructure induces a more even spatial structure, with villages and towns acting as both employment and job centres – in contrast with the pattern in more accessible areas of many residential satellites and relatively few job-rich employment centres. The degree of employment specialisation might also play a role in these remoter locations, with relatively few specialised occupations and jobs, which in other places induce longer work journeys.

Table 2.6 shows the frequency distribution for the Balance and Retention indices for these 107 ‘balanced’ wards. The mean Balance index value for these 107 wards is slightly higher than the value for all 1,152 wards (0.998 compared to 0.986). The mean Retention index for these 107 wards is 0.235, slightly higher than the mean value of 0.188 for all 1,152 wards. Therefore, a few more resident workers (4.7 per cent more) in the ‘balanced’ wards are finding employment in those wards. The correlation coefficient for Balance and Retention for these 107 wards is -0.17075 (an insignificant R^2 of 0.029). Here the sign is ‘wrong’, whereas that for all wards was positive, as expected. Again, the relationship is insignificant.

Table 2.6 Frequency distribution for balance and retention in 107 ‘Balanced’ wards

Index value	Balance		Retention	
	Frequency	%	Frequency	%
1.00–1.09	50	46.73		
0.90–0.99	57	53.27		
0.60–0.66			2	1.87
0.50–0.59			7	6.54
0.40–0.49			12	11.21
0.30–0.39			18	16.82
0.20–0.29			25	23.36
0.10–0.19			41	38.33
<0.10			2	1.87
Total	107	100	107	100

Table 2.7 demonstrates that even where wards have an almost equal number of jobs and resident workers, no ward retains more than 66.1 per cent of its resident workforce. More significantly, many of these balanced wards (40.2 per cent) retain fewer than 20 per cent of their resident workers. Again, this demonstrates that merely balancing the numbers of jobs and resident workers has little bearing on degrees of self containment.

Table 2.7 shows the distribution of Retention index values for these 107 ‘Balanced’ wards, between the six counties. Most of the ‘balanced’ wards in Berkshire and Nottinghamshire retain less than 20 per cent of their workers, while in Lancashire the most ‘balanced’ wards generally retain less than 30 per cent of their resident workers.

Table 2.7 Workforce retention in 107 ‘Balanced’ wards over the six counties

Retain %	Berks	Glos	Lances	Norfolk	Notts	Wilts	Total
60–66.10		1	1				2
50–59.99			1	3		1	7
40–49.99		2	3	3		4	12
30–39.99		3		8	4	1	18
20–29.99	1	2	12		5	5	25
10–19.99	6	2	12	7	12	2	41
<10.00					1	1	2
Total	9	11	30	21	22	14	107

Table 2.8 provides information on the nine wards with almost equal numbers of jobs and resident workers, and where more than 50 per cent of the resident workforce are employed in the zone. It can be argued that these are the most self-contained wards in the six counties because a high percentage of the workforce live and work in the same ward. However, all nine wards are in particularly remote rural locations, with limited

employment choice nearby. It can be argued that it is their remoteness and not the balance of jobs and workers which contributes most to these wards being relatively self-contained.

It might be assumed that as these nine wards have equal numbers of jobs and workers, and high Retention values, that they would also have low work trip lengths. While this is generally the case, there are exceptions. For example, despite high Balance and Retention values, the median out-commuting trip lengths for Lambourne Valley (Berkshire) and Swaffham (Norfolk) are longer than the median for all 1,152 wards (4.01km). The median in-commuting trip length for Lambourne Valley is also longer than that for all 1,152 wards. In these two wards, achieving a numerical balance still results in a wide range of median trip lengths – up to 6.09km for out-commuting and up to 3.97km for in-commuting. Perhaps the point made about rural Norfolk wards earlier applies here: the long distance that out-commuters have to travel to work opportunities offsets the gains of high Retention levels.

Table 2.8 'Balanced' wards retaining more than 50% of their resident workers

County	Ward	Retain (%)	Balance indices	Median out- commute (km)	Median in- commute (km)	Workers	Jobs
All				4.01	3.92		
Berks	Lambourne Valley	57.73	1.041	4.01	3.97	2,200	2,290
Glos	Bourton on the Water	60.71	0.955	1.53	1.49	1,120	1,070
Glos	Camden	54.08	0.980	1.84	2.75	900	960
Lanes	Arkholme	66.07	1.036	0.75	0.79	560	580
Lanes	Bolton Bowland*	58.82	0.683	0	0	410	280

Downham							
NorfolkMarket	54.5	1.023	1.91	2.15	2,220	2,270	
NorfolkSheringham	50.68	0.904	1.89	1.58	1,460	1,320	
NorfolkSwaffham	50	0.989	6.09	3.61	1,820	1,800	
Wilts Malmesbury	52.94	1.059	1.69	1.77	1,530	1,620	

* Bolton by Bowland has 330 jobs, 180 home workers and 50 in-commuters travel <4km.

It is interesting to note some geographical characteristics of these nine wards. These are shown in [Table 2.9](#).

Table 2.9 Characteristics of balanced and high retention wards

	Lamboume Valley
	Bourton on the Water
Remote rural areas	Campden
	Arkholme
	Bolton by Bowland
Coastal	Sheringham
	Swaffham
Old established market towns	Malmesbury
	Downham Market

The pattern emerging is that these balanced/high retention wards are either relatively isolated geographically, or are older, established market towns. The median out-commuting trip length for the 107 balanced wards is 3.87km compared to 4.01km for all 1,152 wards. Therefore, there is only 0.14km

difference between the median trip lengths for ‘balanced’ and all wards. Further, there is a long tail of wards with long out-commuting trips. Indeed, 53 (49.5 per cent) wards have longer median out-commuter trips than the median for all 1,152 wards.

The mean out-commuting trip length for the 107 ‘balanced’ wards is surprisingly higher than that for all wards; at 8.50km compared to 8.38km. Some 55 (51.4 per cent) balanced wards have longer mean out-commuter trips than the average for all 1,152 wards. There is a wide range of out-commuting trip lengths for the 107 balanced wards. The obvious suggestion, then, is that settlements with a close balance of resident workers and jobs do not always exhibit shorter out-commuting trips, whether the latter is measured in median or mean values.

The mean in-commuting trip length for the 107 ‘balanced’ wards is 7.77km compared to 7.93km for all 1,152 wards. Again, there is a long tail of wards with long trip lengths. Indeed, 37 (34.6 per cent) of the 107 wards have longer average in-commuter trips than the average for all 1,152 wards. Balanced wards therefore do not induce significantly shorter in-commuting trips, whether measured in median or mean terms, than do all wards.

Analysis of the 107 highly balanced wards has found that these do not have Retention and Trip Length characteristics that are appreciably different from those for all wards. Just to exhaust this line of analysis, [Table 2.10](#) focuses on the 6 wards from the 107 with an almost perfect numerical balance between resident workers and jobs. The aim is to test whether those wards with perfect balance have higher degrees of self-containment.

Table 2.10 Wards with a close numerical balance between workers and jobs0

County Ward	Retain (%)	Median commute (km)	out-Median commute (km)	in-Workers/Jobs
All		4.01	3.92	
Lanes Gisburn, Rimington	49.0	6.25	3.50	490
Lanes Kirkham North	29.9	2.63	1.79	1370

Norfolk	Mershe Lande	18.8	4.53	4.18	850
Norfolk	East Dereham- St. Withburga	17.3	3.20	2.80	810
Notts	East Markham	32.3	7.39	5.09	960
Wilts	West Lavington	46.6	4.25	1.63	450

The answer is no. Retention levels are a little better than those for all wards, with between 17.3 per cent and 48.98 per cent of the workforce working locally. Median out-commuting trips vary, with four of the six wards experiencing longer median out-commuting trips than the median trip length for all 1,152 wards (4.01km). Further, two wards (Mershe Lande (Norfolk) and East Markham (Notts)) have median in-commuter trips longer than the median trip lengths for all 1,152 wards of 3.92km. Therefore, a high proportion of resident workers are making long out-commuting trips to find employment, and many local jobs are taken by in-commuters travelling equally long distances. Indeed, these are the very types of trip patterns the Government is seeking to reduce by their policy of ‘balanced’ communities.

[Table 2.11](#) shows the correlation coefficients for balance values and the three self-containment indices for the 107 balanced wards. These values can be compared directly to those in [Table 2.5](#) for all 1,152 wards. As explained earlier, the association between balance and retention values is insignificant, with the wrong sign if high retention values are to be associated with wards in balance. The sign is correct for the correlation between balance and median out-commuting distance, but again the association is insignificant ($R^2=0.02$). The same conclusion can be drawn concerning balance and median in-commuting trip length ($R^2=0.007$).

Table 2.11 Correlation coefficients in the 107 balanced wards1

	Retention	Out-commuting length	median	trip	In-commuting length	median	trip
Balance	-0.17	-0.14			0.08		

Having determined that balanced wards do not have significantly higher degrees of self-containment than other wards, the analysis can now switch to the characteristics of those wards with higher degrees of self-containment – regardless of their balance characteristics. As explained earlier, analysis of highly self-contained wards will focus on: *High Retention* wards, with retention values of 0.5 and more; wards with *Low and High Out-Commute Trip Lengths*, looking at the 10 per cent of wards with the highest and the 10 per cent with the lowest out-commute trip lengths; and wards with *Low and High In-Commute Trip Lengths*: focusing on the 10 per cent of wards with the highest and the 10 per cent with the lowest median in-commute trip lengths.

High Retention wards If settlements are to have reduced commuter travel lengths, they will generally have to retain a high proportion of their resident workforce. Therefore, it is appropriate to undertake some analysis of wards with high Retention index values. A Retention index of 1.0 means that all the resident workforce are employed in the zone. It could be expected that the clustering of employment activities, particularly in urban wards, encouraged often by local plan policies, will have led to wards being either residential or employment rich. The result is likely to be low retention levels in residential wards. Indeed in only 34 (2.95 per cent) of the 1,152 wards do more than 50 per cent of the resident workforce work in their ward of residence.

Table 2.12 Distribution of 34 wards with Retention index values greater >0.5 across the six counties²

County	No. of wards	Wards in county	% of county wards
Berks	2	124	1.61
Glos	7	145	4.83
Lanes	6	304	1.97
Norfolk	12	230	5.23
Notts	1	191	0.52

Wilts	6	158	3.79
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[Table 2.12](#) shows that Norfolk has a high share of these 34 wards with high retention values. Some 5 per cent of wards in the county retain more than 50 per cent of their resident workforce. Berkshire and Nottinghamshire have very few such wards. It might be expected that wards with high retention levels are job-rich wards, with a relatively large choice of local jobs. This is the case with 24 of the 34 wards. But surprisingly, 10 wards (Bourton on the Water, Beacon, Campden, (Glos), Bowland, Newton and Slaidburn, Bolton by Bowland, (Lanes), Wells, North Coast, Burnham, Sheringham, Swaffham (Norfolk)) have more resident workers than jobs. This apparent inconsistency may be accounted for by their relatively remote, rural locations. Five of the 34 wards (Lambourne Valley (Berks), North Coast, Reedham, Burnham and Swaffham (Norfolk)) have long median out-commuting trips (longer than the median of 4.01km for 1,152 wards). This pattern of high balance, high retention and long out-commute trip lengths is becoming familiar. It suggests that the few resident workers who commute out of these wards have to travel long distances; thus pushing up the average out-commute trip length. Considering that most of the 34 wards are job-rich, it is perhaps surprising that only 5 wards (Rampton, (Notts) Glaven, Diss Town and Reedham, (Norfolk), and Lambourne Valley (Berks)) have long median in-commuting trips (longer than the 3.92km for all 1,152 wards). Reedham and Lambourne Valley have long median out-commuting and in-commuting trips, with resident workers travelling long distances to find employment, and in-commuters travelling equally long distances.

Looking at the mean out-commuting trip lengths for these 34 wards, 17 wards (50 per cent) have averages longer than the average for all 1,152 wards of 8.38km. The number of wards with longer than the average trip length is high given that 7 wards of the 14 have an almost numerical balance between jobs and the resident workforce, and the remaining 10 wards are all job-rich. Seven wards (20.6 per cent) have mean in-commuting trips longer than the mean for all 1,152 wards (7.93km). This is to be expected as these are all job-rich wards.

Table 2.13 Wards retaining more than 60% of the resident workforce3

County Ward	Retain (%)	Balance indices	Median commute (km)	Median out-commute (km)	in-Workers commute (km)	Jobs
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All		4.01	3.92			
Berks	Eton North and South	65.67 1.836	1.24	1.89	670	1,230
Glos	Bourton on the Water	60.71 0.955	1.53	1.49	1,120	1,070
Glos	Stow on the Wold	60.27 0.955	1.53	1.83	730	870
Lanes	Arkholme	66.07 1.036	0.75	0.79	560	580
Lanes	Bowland, Newton and Slaidburn	60.98 0.683	1.78	0.33	410	280
Norfolk	Glaven	62.73 1.536	1.64	5.41	1,100	1,690
Norfolk	Hunstanton	72.95 1.385	1.28	1.95	1,220	1,690
Notts	Rampton	68.06 3.153	2.50	8.12	720	2,270
Wilts	Fonthill	65.31 1.204	1.58	2.60	490	590

[Table 2.13](#) provides information on the 9 wards with the very highest retention indices, where between 60 per cent and 73 per cent of the resident workforce are employed in the zone. It could be argued that these are the most self-contained wards in the data set because a very high proportion of resident workers are employed locally. These very high retention levels cannot be explained by balance, as only 3 of these wards have balance index values close to unity. Four of the 9 wards are job-rich, which is consistent in principle with high retention levels. Generally, commute distances are short, with the exceptions of Rampton (Nottinghamshire) and Glaven (Norfolk) where workers are attracted into the wards from long distances.

Other characteristics of these wards with high retention values are: their remote locations in fell, moorland or coastal areas (Arkholme, Bowland,

Newton and Slaidburn, Glaven, Hunstanton and Fonthill) where there is limited employment choice in the surrounding area; their location as tourist attractions (Bourton on the Water, and Stow on the Wold), providing low skill local jobs; or wards with large institutions (public school and high security prison) which provide accommodation and employment choice (Eton North and South, and Rampton).

Low and High Out-Commute Trip Lengths The purest measure of self-containment for the purposes of this paper must be trip length, because ultimately policy is intended to reduce overall travel. Having decided earlier that a numerical balance between resident workers and jobs in any ward is not significantly associated with less travel, the interesting question is what are the characteristics of wards with low (and high) median trip lengths? To gain some understanding of this, attention is focused on the 10 per cent of wards with the shortest median out-commute trip lengths and the 10 per cent with the 10 per cent with the longest.

Table 2.14 shows the distribution across the six counties of the 10 per cent of wards with the shortest median out commuting trips. It may be significant that the more urban counties of Berkshire and Nottinghamshire have the lowest percentage of wards with short commuter trips while the more rural counties of Wiltshire and Lancashire have the highest percentage of wards with short commuter trips.

Table 2.14 Distribution by county of the 10% shortest median out-commuting trips

County	No. of wards	% of county	inNo. balanced wards	of wards	Retain >50%	Retain <10%	Median commute >3.92km	in-Job-rich wards
Berks	6	4.84			1	5		6
Glos	15	10.34	4		4	1	1	9
Lanes	39	12.83	5		5	3	4	26
Norfolk	24	10.43	1		4	1	11	20
Notts	6	3.14						4

Wilts	25	15.82	3	3	5	5	15
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It could be argued that short out-commuting trips can be expected from these wards because 70 per cent of the wards in the selected 10 per cent are job-rich and hence offer more local employment choice for the resident workers. In spite of this, retention in these wards is generally poor. However, the geographical location of these wards offers something of an answer to what otherwise seems to be a conundrum. Short median trip lengths associated with low retention levels in job-rich areas seems to be a feature of wards that are urban or suburban, where abundant employment opportunities lay nearby, as well as in the ward itself. A large proportion of the 10 per cent of wards considered have these features. A proportion of the remaining 30 per cent of the wards with the shortest out-commute trip lengths are in job-rich remote or coastal locations with limited employment choice in nearby wards. Long in-commuting trips can also be expected to fill the job over-supply in these wards, especially from the hinterland of the coastal resorts of Norfolk.

[Table 2.15](#) shows the distribution across the six counties of the 10 per cent of wards with the longest median out-commuting trips. Retention is poor in all of these wards, 90.4 per cent of which are predominantly residential in character, while five further wards have almost equal numbers of jobs and workers. Local employment choice for the majority of the resident workers in these wards is therefore, limited.

Table 2.15 Distribution by county of the 10% longest median out-commuting trips⁵

County	No. of wards	% of county	inNo. balanced wards	of retain wards	>50%	<10%	Median commute >3.92km	in-Resident wards
Berks	11	8.87	2		3	7		7
Glos	16	11.03				2		16
Lanes	8	2.63			3	1		8
Norfolk	41	17.83	1		3	11		38

Notts	23	12.04	2	11	19
Wilts	16	10.13		2	16

Lancashire and Norfolk have respectively, the lowest percentage and the highest percentage of wards with long median out-commuter trip length. Many of the wards with the longest out-commute trips are in the hinterlands, but not immediately adjacent to, larger towns like Reading and Bracknell, Gloucester and Cirencester, Chorley and Wigan, Norwich and King's Lynn, Nottingham, Swindon and Salisbury. It is also significant that there are motorway links, which tend to induce long commuting trips, near all these major towns except Norwich, King's Lynn and Salisbury. Other wards with long out-commute trips are in remote, rural areas with limited employment choice locally. Interestingly, in Norfolk and Nottinghamshire, a high proportion of wards with high median out-commute trip lengths also have median in-commute trip lengths longer than that for all 1,152 wards.

Three of the four wards with the longest median out-commuting trips are wards in Norfolk, the other being Ashton Keynes in Wiltshire. [Table 2.16](#) provides details of the three Norfolk wards. All are resident-rich wards, with little local job choice. Retention is poor in all three wards, so the small amount of local work is taken by workers from other wards, also travelling relatively long distances. Horsefen and Homing are coastal hinterland wards and are both in commuting distance of Norwich and Great Yarmouth, the main employment zones in the area. Haverscroft is in central southern Norfolk, and has rail links to Norwich and Thetford, making commuting to these employment centres possible.

Table 2.16 Wards with the longest median out-commuting trip lengths⁶

Ward	Retain % Balance indices	Median commute (km)	out-Median commute (km)	in-Workers Jobs
All		4.01	3.92	
Horsefen	19.5	0.4756	14.66	3.50
Homin	12.5	0.4375	14.41	5.83
Haverscroft	3.6	0.1785	13.21	4.50
				820 390
				320 140
				560 100

Low and High In-Commute Trip Lengths Table 2.17 shows the distribution across the six counties of the 10 per cent of wards with the shortest median in-commuting trips.

Table 2.17 Distribution by county of the 10% shortest median in-commuting trips⁷

County	No. of wards	% of county	inNo. balanced	of wards	Retain >50%	Retain <10%	Median commute >4.01km	in-Resident wards
Berks	8	6.45			3	7		8
Glos	18	12.41			1	1	14	18
Lanes	25	8.22	2		3	7	11	24
Norfolk	35	15.22			1	6	30	35
Notts	13	6.81				4	12	13
Wilts	16	10.13				2	13	16

All except one ward are residential in character, and hence offer few opportunities to in-commuters. Geographically, the majority of these wards are remote, either coastal or coastal hinterland, downland, fen, forest or moorland fell, or close to major employment areas. Again, Norfolk is an extreme case, with 15 per cent of its wards falling into the decile of wards with the shortest in-commute trip lengths. Most of these wards in Norfolk with short in-commute trip lengths have long out-commute trip lengths.

Table 2.18 shows the distribution across the six counties of the 10 per cent of wards with the longest median in-commuting trips. It is significant that the more, urban counties of Berkshire and Nottinghamshire have the largest percentage of wards with long in-commuter trips. The majority (59 per cent) of the wards are job-rich, which is consistent with long in-commuting trips. Surprisingly, retention – which might be expected to be relatively high in job-rich wards – is poor in all but two wards.

Table 2.18 Distribution by county of the 10% longest median in-commuting trips⁸

County	No. of wards	% of wards	inNo. balanced county	of wards	Retain >50%	Retain <10%	Median commute >4.01km	in-Resident wards
Berks	26	20.97	6		2	22		5
Glos	15	10.34			4	13		7
Lanes	13	4.28			1	6		2
Norfolk	25	10.87	4		1	21		11
Notts	22	11.52	1		1	3	16	7
Wilts	14	7.33	2		1	2	9	8
Totals	115				13	87		-40

Conclusions

This paper has presented the findings from empirical work relating measures of resident worker/jobs balance to measures of self-containment in 1,152 census wards in six English counties. This ward level analysis is part of a broader investigation that looks at all levels of the urban hierarchy. Indices of balance and self-containment have been defined and the sources of data explained. The analysis has been presented initially for all wards, with the relationship between balance index values and those for retention, out-commuting and in-commuting trip lengths being explored systematically. Subsequently, the focus has been not on balance, but on identifying the characteristics of wards with high self-containment index values. The intention here has been to ask the question: if balance does not induce less travel, what does?

The rationale for the whole exercise is the testing of the assumption behind the policy of ‘jobs-housing balance’ that is being promoted by central government and being adopted in many development plans. This policy assumes that a close numerical balance of homes and jobs – interpreted here as resident workers and jobs – in settlements will lead to more people working locally, and hence to reduced travel.

The major conclusion from this work is that, on the basis of ward level analysis at least, this policy approach is misguided. There is no significant relationship between balanced wards, where the number of resident workers and jobs is almost identical, and various measures of self-containment. Thus, there is no evidence to justify the ‘homes/jobs balance’ policy being pursued so enthusiastically by many planning authorities.

At a more detailed level, the analysis for all wards shows:

- Under 10 per cent of wards have almost equal numbers of jobs and workers. These are the types of ‘balanced’ settlements the Government is seeking to create.
- Correlation analysis suggests that there is no significant relationship between levels of balance, and levels of retention, or between in-commuting and out-commuting median trip lengths.
- Retention values at ward level are generally poor, with on average less than 19 per cent of workers being employed in their ward of residence.
- More rural counties appear to have slightly higher retention levels, with wards typically retaining 22 per cent of their resident workforce.
- However, wards with high retention values do not necessarily have shorter median out-commuting trip lengths than those with lower retention levels. High balance and retention values in rural wards are associated with long median out-commute trips because of a relatively small number of very long out-commute trips.
- 57.4 per cent of wards have longer median out-commuting trip lengths than the median trip length for all 1,152 wards of 4.01km and 53.13 per cent of wards have longer average out-commuting trip lengths than the average trip length for all 1,152 wards of 8.38km.
- 29.9 per cent of wards have longer median in-commuting trip lengths than the median trip length for all 1,152 wards of 3.92km and 26.48 per

cent of wards have longer average out-commuting trip lengths than the average trip length for all 1,152 wards of 7.93km.

Conclusions on Balanced Wards

- Wards with Balance index values close to 1.0 and the highest Retention index values tend to be in fairly remote locations – fen, moorland, downs, Cotswolds, or coastal locations.
- Even where wards have a close balance of jobs and workers, 40 per cent retain fewer than 20 per cent of resident workers, demonstrating that merely balancing the numbers of jobs and workers does not result in a high proportion of resident workers working locally.
- Balanced settlements exhibit a wide range of commuter trip lengths, not always short commuting trips.
- Most of the balanced wards in Berkshire and Nottinghamshire retain less than 20 per cent of their workers, while in Lancashire the most balanced wards retain less than 30 per cent of the workforce.
- The difference between the median and mean out-commuting trip lengths for ‘balanced’ and all wards is small: 0.14km less for median trip lengths and 0.12km less for mean trip lengths.
- The difference between the median and mean in-commuting trip lengths for ‘balanced’ and all wards is small, 0.23km less for median trip lengths and 0.16km less for mean trip lengths.
- Although six wards have equal numbers of jobs and workers, retention levels are poor, with few workers working locally, and four of the six wards experiencing longer median out-commuting trips than the median trip length for all 1,152 wards (4.01km). Two wards have median in-commuter trips longer than the median trip lengths for all 1,152 wards of 3.92km.

Conclusions on Retention Levels

- Only 2.95 per cent of the 1,152 wards have more than 50 per cent of the resident workforce work in the zone.

Conclusions on Trip Lengths

- The more urban counties of Berkshire and Nottinghamshire have the lowest percentage of wards with short median out-commuter trips while the more remote, rural counties of Wiltshire and Lancashire have the highest percentage of wards with short median out-commuter trips.
- The more remote counties of Lancashire and Norfolk have, respectively, the lowest percentage and the highest percentage of wards with long median out-commuter trip lengths.
- Geographically, the majority of wards with short median in-commuting trip lengths are remote, either coastal or coastal hinterland, downland, fen, forest or moorland fell, or are close to major employment areas.
- The more urban counties of Berkshire and Nottinghamshire have the largest percentage of wards with long median in-commuter trips. Although the majority of these wards are job-rich, with significant local employment choice. Retention is poor in all but two wards.

It is difficult, then, to find any support for this analysis for those planners who have pursued the jobs-housing balance logic so enthusiastically. The overall ward-level analysis shows no significant relationship between the degree of balance and the degree of self-containment. Whenever, a pattern seems to emerge, e.g. between high balance and high retention, it is undermined by long average trip lengths. If balance is left aside, and the focus is on the characteristics of places with short average trip lengths, it is again difficult to pick up any clear patterns. Perhaps other indices not used here might have identified more significant relationships. Alternatively, a different methodological approach, e.g. regression analysis, might have been more fruitful. However, the suspicion remains that, as a result of high levels of mobility and increased job specialization, journey-to-work patterns have become very complex. Accordingly, appropriate policy interventions to reduce travel are very difficult to identify.

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Chapter 3

Reducing Sprawl and Delivering an Urban Renaissance in England: Are These Aims Possible Given Current Attitudes to Urban Living?

Katie Williams

Introduction

'... there may be exceptional periods when cities do not simply react to external change, but rather that they create change' (Robson *et al.*, 2000, p. 6)

In the UK, reducing urban sprawl and revitalising towns and cities have been dual, and related aims of the planning system and of urban policy for many decades (Healey, 1997; Jenks *et al.*, 1996). However, since the late 1980s these aims have been given a new language: that of sustainability. The ‘sustainable city’ is characterised in English spatial planning by the idea of the ‘compact city’. In physical terms, this translates to cities and towns which are contained, built at higher densities than current averages, and have a mix of uses (Jenks *et al.*, 1996). This implies development processes which reduce sprawl by using urban, preferably brownfield, land rather than greenfield or edge sites.

The reasons why compact settlements are seen as more sustainable are well rehearsed, but worth summarising. Planning policies and guidance assert that by promoting more dense, contained cities urban land is recycled and remediated and rural land preserved. Existing urban infrastructure and services, such as roads, street lighting, schools and hospitals are used optimally, and provided economically. Numbers of trips by fuel-rich modes of transport, such as the car, are reduced as people live near their work and recreation facilities. Also, public transport is supported by high population densities. It is argued that local economies will then flourish, supported by a critical mass of population. Furthermore, compact cities enjoy the masses of population which encourage cultural exchange, creativity and a cosmopolitan way of life (see Williams, 1999a for a summary of the origins of these claims in policy). It should be noted that there is considerable dispute over legitimacy of many of these claims, however they are all represented in English planning or sustainability policies, guidance and/or strategies (Williams *et al.*, 2000).

The shifts in English planning policy and guidance towards a stronger message on urban containment and compaction had several clear drivers. The first were global commitments to develop sustainable strategies for future development following the Brundtland Report (WCED, 1987) and the Rio Earth Summit. Primarily, these led to a concentration on how to reduce carbon dioxide emissions, hence car travel came under the spotlight. This prompted

the government and municipal authorities to develop sustainability strategies and policies, including a move to make cities more compact to reduce car trips, and hence emissions (e.g. HM Govt, 1994; DoE and DoT, 1994).

The second and perhaps more important drivers were political pressures arising from conditions within England's towns and cities. By the late 1980s, most major cities in England had been losing populations for decades. They had also lost employment opportunities through industrial change and relocation. Hence, some districts and neighbourhoods within cities had visibly declined, and their remaining populations were experiencing economic problems and related social impacts. In addition, traffic congestion and inefficient public transport systems were making urban mobility a political issue. Simultaneously, an increase of house building activity on greenfield sites was taking place.

Against this backdrop, in 1995, the Government released housing projections for the next 20 years (DoE, 1995). These indicated that 4.4 million new homes would be needed. This figure has since been revised downwards to approximately 3.8 million (Urban Task Force, 1999), but at the time the 4.4 million figure brought the issues of further greenfield development, and urban decline into sharp focus. Hence, during the 1990s the issue of where to locate future housing in England became hotly contested. For these related reasons pressure built up on the one hand for urban regeneration, and on the other for protection of land in the countryside.

In this context, the 'compact city' solution was politically attractive to Government. The logic of simultaneously reducing sprawl and renewing declining urban areas was seemingly a 'win-win' situation. There was also a considerable amount of research to suggest that compaction was a sensible way to achieve some sustainability objectives. Most notably, work on reducing the need to travel through increasing densities and clustering trip ends (Newman and Kenworthy, 1989; Ecotec, 1993) supported sustainability commitments.

Hence, a number of important policy changes were made during the 1990s and early 2000s in England. The most significant were initially in planning policy guidance on transport (DoE and DoT, 1994) and housing (DTLR, 2000b). *PPG13: Transport*, was revised to advocate clustering trip ends and raising densities to reduce car travel. *PPG3: Housing* was significantly updated to increase housing densities and give priority to urban rather than greenfield sites. This has been described as a sequential approach to land for housing and is seen as a major policy tool in reducing urban sprawl. Another very significant move in the 1990s was the introduction of a 'brownfield target' for housing. This was introduced in 1998 and stated that 60 per cent of all housing development nationally should be built on reused urban land (DETR, 1998). Targets now have to be reviewed at the regional level in England.

However, these policy changes were all still rather disparate, and progress towards more compact, liveable and sustainable cities was, at best, slow. There was also a clear gap in policy for coherent guidance on urban areas. By the end of the 1990s the issue of housing location was also becoming more politically charged, particularly in over-stretched regions in the South, and pressure was mounting for the Government to take action. As a response, in 1998, the Government set up the Urban Task Force, chaired by the

architect Sir Richard Rogers, to identify causes of urban decline, recommend solutions to bring people back into cities, and establish a new vision for urban regeneration. The Task Force was made up of academics, representatives of pressure groups, planning consultants, developers and local government professionals. It published its findings in a comprehensive report on the state and future of English cities in 1999. The report was entitled *Towards an Urban Renaissance* (The Urban Task Force, 1999).

Some but not all of the Task Force's recommendations were developed and published a year later as the government's major statement on the future of urban England: *The Urban White Paper: Our Towns and Cities, Delivering the Renaissance* (DETR, 2000a). This Paper had much to say about the urban regeneration, but on the important issue of urban form, it continued the aims of previous policies in advocating containment, and facilitating urban compaction and intensification.

While the White Paper was welcomed by many in planning for reinforcing policies to contain and repopulate cities, others questioned the feasibility of achieving the 'urban renaissance' (Williams, 1999b; Lizieri, 1999; Barras, 1999). The main sticking point is that the forces resulting in urban decline, namely residential and economic decentralisation, are so strong in some parts of the country that to bring about a complete turn-about seems unrealistic. While the reasons for urban decline are numerous, most commentators point to people's locational and lifestyle preferences as being key barriers (Breheny, 1997; Williams, 1999). The White Paper, and planning policy guidance before it, pays much attention to the supply of land for housing development, but perhaps the important question is: is there a demand for the urban renaissance? The question of whether it is possible to re-populate cities with high density urban forms, given existing housing and lifestyle aspirations, is the crux of the urban renaissance concept.

The purpose of this paper is to assess the 'demand' for the urban renaissance from the perspective of potential urban dwellers. It addresses questions such as who will the newly urban be? What will make existing urban dwellers stay in, rather than leave, the city? And what types of 'ideal' or 'model' do we have for urban living that are attractive enough to entice people back into cities? Furthermore, given the Task Force's investigation and the Urban White Paper, are we any closer to understanding the extent of the demand for the urban renaissance? Are the solutions now proposed any more sophisticated than previous containment policies? In short, in prescribing a renaissance, has the best use been made of our knowledge about urban living? The paper is split into three sections. These:

- Set out the context for the 'urban renaissance' in England. This section explains why a renaissance is seen as necessary and explains in terms of spatial planning, how the renaissance is to be achieved.
- Review the evidence of a demand for the urban renaissance from the perspective of existing and potential urban residents. This section reviews data on population change and on attitudes to urban living to shed more light on the potential for the renaissance.
- Conclude on the likelihood of a renaissance, given the evidence on attitudes to urban living presented, and raise some issues for discussion.

The Context for the ‘Urban Renaissance’ in England

A range of complex factors has left many, though not all, England’s towns and cities requiring a ‘renaissance’ at some level, or in certain neighbourhoods. A simplified summary of these issues was presented in the Urban Task Force’s Report (Urban Task Force, 1999), and a fuller picture can be found in Robson *et al.* (2000).

In economic terms, continued industrial decline, particularly the accelerated decline of heavy manufacturing in the last thirty years has been the major cause of urban malaise. Whilst this has been coupled with an increase in technology industries, the service sector and self-employment, in some cities it has left whole neighbourhoods and communities decimated. Abandoned, derelict and empty properties are a feature of these areas. Clearly London and some regional cities have benefited from new roles in a global market for finance and business, but the majority of English towns and cities have not profited substantially from this shift. Added to this has been a massive investment by the property sector over the last twenty years in suburban and peripheral housing estates, out of town shopping centres, leisure complexes and business parks. The decentralisation of economic activity is now seen as a profound shift in the economic geography of England (Breheny, 1997; 1999; CPRE, 2001).

The UK has also seen the continuation of major regional economic inequalities, with only London and the South East exceeding the average income per head (DETR, 2000a). Areas such as Merseyside in the north of England had average incomes as low as 75 per cent of the national average GDP per head (Urban Task Force, 1999). In terms of urban sprawl, these inequalities have significant implications. Clearly, people have followed jobs, and this uneven wealth has created disproportionate demand for housing in more prosperous regions. For example, in the South East land for housing is becoming scarcer, whereas in the northern regions greenfield land is being released to stimulate development, when a massive stock of brownfield land exists (DETR, 2000a).

These economic trends have also had major implications for population patterns within towns and cities, which are worth setting out as a backdrop to understanding the potential for change in the future. Outward migration from the cores of cities to the suburbs and beyond has characterised population movements for most of the last century. The movement has been characterised as a population ‘cascade’ with people, and families in particular, moving from urban centres to the suburbs, smaller towns and more rural areas (*ibid.*). Those living in suburban areas have also tended to move further out. In most of England’s conurbations, the rates of net out-migration are highest for the better-off. There has also been in-migration, but at slower rates than the urban exodus. International migration and minority ethnic populations have dominated this inward movement.

However, now, after decades of decline, there are early signs that the losses in some central urban populations are slowing, and some core areas are beginning to re-populate (Urban Task Force, 1999). Urban regeneration policies have been successful in some of England’s largest cities such as Leeds, Newcastle and Manchester. In parts of these cities the image of urban living has been overhauled and a flow of new residents has been achieved. However, overall the pattern is still of counter-urbanisation, and many

neighbourhoods consistently under-perform on all indicators of economic and social well being.

Given this backdrop, the issue of where to locate new housing becomes complex. In common with much of Europe, England is currently witnessing a very slowly growing population, but a steep increase in number of households. There were 19.21 million households in England in 1991, but this is projected to grow to 24 million by 2021 (ONS, 2003) Hence England expects an increase of 19 per cent in its household numbers over the next 20 years. The biggest factor in this increase is the number of single person households: a projected 70 per cent of the growth (or 2.7 million) (*ibid.*). These households will comprise young people living alone, divorced and unmarried people and older people. Many of these new households are also likely to be on low incomes. However, there is considerable political pressure to resist locating new homes on greenfield or edge of city sites, and there is little serious consideration of new settlements by central government. Environmental pressure to protect the countryside and to reduce car travel have all but killed broader discussions about new towns or cities.

The White Paper sets out starkly the threat of locating the new housing in locations that it deems might contribute to urban sprawl. It states four consequences:

- ‘continuing pressure for the expansion of towns and cities into greenfield development with a continuing legacy of underused land and buildings within urban areas;
- a wider social impact on rural communities with local people being priced out of the housing market...;
- previously healthy communities near city centres experience increasing social polarisation, with those who cannot move living in a poor local environment with high levels of crime ...; and
- wasteful use of natural resources and increased pollution as those who move out travel greater distances to get to work, shops and the places where they spend their leisure time ...’ (DETR, 2000a, p. 24).

Hence, with respect to built form, the Paper makes an explicit case for higher density housing, more brownfield development and reusing urban land, calling recent proportions of greenfield development ‘unacceptable’

The Paper then sets out changes required to deliver more sustainable and prosperous cities. In terms of spatial planning these have three aspects: better planning and design, bringing back previously developed land and empty property into beneficial economic or social use and better maintenance of the existing built fabric. It outlines a number of fiscal and policy measures that the government has implemented, is about to announce, or is reviewing, to meet these aims. These range from accelerated tax credits for cleaning up contaminated land, to capital allowances for creating ‘flats over shops’ and a review of planning obligations and impact fees.

The Paper also outlines how recent changes in planning policy guidance are supporting these aims, citing the changes to *PPG3: Housing* mentioned above, strengthened by a new

Greenfield Housing Direction (October 2000) which gives the Secretary of State powers over major greenfield developments. The only real mention of an alternative to urban infill is planned extensions, which are seen as the next most sustainable option.

An interesting element of this discussion, which is perhaps worth clarifying here, is that of density. The message in the Urban White Paper (and PPG3) is that new housing needs to be built at higher densities than current averages. The White Paper translates the household projections into ‘spatial consequences’, and warns that if the required homes are built at current average densities for new development they would cover an area larger than Greater London. However, only 15 per cent of Britons currently live in places with inner city levels of population density (50 people per hectare or above gross). Mostly, English people live at suburban densities of around twenty people per hectare (Schoon, 2001). Even at these relatively low densities, 80 per cent of the population live in built up areas of over 10,000 people which only cover 7 per cent of land. This point is made to give a clear picture of the current character and intensity of urbanisation in England.

In summary then, from the Government’s perspective, the reasons for requiring a renaissance are clear. Cities have lost large proportions of their populations, and too much greenfield land is being used for housing. The policy now is to rectify this situation by repopulating cities and building housing on urban land. The renaissance hopes to ‘benefit everyone, making towns and cities vibrant and successful, and protecting the countryside from development pressure.’ (DETR, 2000a, p. 7). However, when stripped back to its essentials, the concept of the ‘renaissance’ is largely a new language, or ‘branding’ for a package of familiar policies. These include the move to sustainable cities, urban regeneration, increased compaction, brownfield reuse, reduced sprawl and rural protection.

Evidence of the Demand for Urban Renaissance

Two key sources have been chosen to investigate whether a ‘bottom-up’ demand exists for the urban renaissance. The first are data on migration and population movements. These are reviewed in order to see if, when analysed beyond the level of basic net trends, they shed any light on the potential success of renaissance policies. For example, can they tell us which areas are attracting people back into urban living? The second source is data and research on attitudes to urban living. These are investigated to see, for example, if there is a latent demand for city life, or a general pro-urban movement which is somehow not represented by the net migration figures.

In reviewing these two sources of data it is clear that much of it has been collected to support different viewpoints on urban living. Hence, it is useful to recognise this potential bias. Two distinct ‘camps’ have been characterised throughout the history of the urban containment debate, for example as ‘crammers and sprawlers’ (Harrison, 2000), or ‘centrists and decentrists’ (Breheny, 1997). A useful contemporary categorisation is given by Rogers and Power (2000) who summarise pro-urban and pro-greenfield development lobbies. The first group consists of: the pro-city lobbyists; environmentalists, who are anti-

greenfield development and anti-car; social environmentalists, who see the urban renaissance as a way to reverse social polarisation; and NIMBYs, the ‘not-in-my-back-yard’ camp, who oppose further greenfield development or rural destruction. The second group comprises; builders who want easy, more profitable greenfield sites; the ‘affordable housing’ lobby who believe greenfield housing may be a route to affordability; and the ‘affordable movers’ who cannot afford reasonable housing in popular inner areas and reject poorer neighbourhoods with cheaper housing, so opt for the cheaper greenfield low-cost quality option. Both camps have support from elements of the academic community, split into those who believe that the renaissance is desirable and possible, and those who, given the evidence, are unsupportive or sceptical. Broadly, these two camps can be described as ‘optimists’ or ‘pessimists’ in achieving the renaissance. These terms will be used as shorthand for the two camps described.

The Relevance of Population and Land Use Data

The predominant patterns of recent population change in England have been outlined above: counter-urbanisation has been significant, and continues, but there are some very early signs that this trend might be slowing or reversing. The purpose of this section of the paper is to look more closely at this data to see if these changes do in fact indicate a demand for a renaissance.

Those pessimistic about the potential of the renaissance reiterate that in the 1980s and 1990s net out migration from the main conurbations to the rest of the country averaged around 90,000 people a year (Champion *et al.*, 1998). Every single district of metropolitan England was a net loser through its migration exchanges with non-metropolitan areas between 1981 and 1991, although the rate of net loss varied between districts. Greater London stood out as the main contributor to out migration (*ibid.*).

However, the optimists argue that the numbers involved in this counter-urbanisation movement are crucial. In his comprehensive review of the state of Britain’s cities Nicholas Schoon makes the point that: ‘the counter-urbanisation cascade is a two-way street, with more people moving out than in. If the outward flow from the conurbations was reduced by a fifth and the inward flow from smaller towns and the countryside increased by a fifth, the net outflow would cease.’ (Schoon, 2001). And it may be that such change is beginning to happen. An analysis of recent migration trends is presented in a report by Robson *et al.* (2000) which was published alongside the Urban White Paper. It makes the point that demographic patterns in the 1990s are markedly different in England from the 1970s and 1980s (Table 3.1). It states that ‘... the recent migration data ... tell a much more positive story about cities than might commonly be supposed’ (*ibid.*, p. 16.), pointing out that some of England’s main cities such as Manchester, Leeds and Birmingham now have sizeable populations in their core areas.

Table 3.1 Average annual population change in the UK’s conurbations, 1971–1997

Conurbations	Average annual population change (%)
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	1971–1981	1981–1991	1991–1997	
Greater London	-1.01		-0.45	0.06
Greater Manchester	-0.49		-0.54	0.00
Merseyside	-0.87		-0.88	-0.04
South Yorkshire	-0.16		-0.37	0.00
Tyne and Wear	-0.56		-0.47	-0.01
West Midlands	-0.53		-0.51	0.00
West Yorkshire	-0.15		-0.23	0.02
Former County of Cleveland	-0.03		-0.38	-0.01

Source: Robson *et al.* (2000).

The most up to date data on population change confirm this, although in terms of actual numbers moving, the trend is not strong. Table 3.1 shows annual population change in England's conurbations over the last three decades. It illustrates a definite shift, with all but three of the conurbations exhibiting gains or balances between 1991 and 1997. Whereas the big cities suffered significant percentage losses of population in the 1970s and 1980s, there has been a widespread turn-around in the 1990s. For example, Greater London's population grew by 232,000 between 1991 and 1997. Even though Merseyside, the West Midlands and Tyne and Wear lost populations overall in this period, the rates of loss were slower than in the two preceding decades. South Yorkshire and Greater Manchester had populations which levelled and West Yorkshire gained 25,000. Robson *et al.* have pin-pointed this turnaround, even more marked in the latter years of the decade.

This shift can be partly linked with successful urban renewal projects. As Robson *et al.* argue, 'The obverse side of ... patterns of deprivation and collapsing neighbourhoods has been the new vitality that has increasingly been evident in the cores of some older urban areas where there has been significant selective growth in the residential population. This represents a sea-shift in the nature of urban populations.' (*ibid.*, p. 17). They go on to suggest that 'Declining neighbourhoods are of concern, but they do not in themselves signal the demise of a city' (*ibid.*, p. 17.). This report also makes the important point that migration trends need also to be reviewed against trends in household size, because regardless of whether the conurbations are losing overall population, they are actually increasing their household numbers.

Overall, this data does display a very slight turn around in urban living, but it needs to be set in context. It is too early to determine if it is evidence of a general a demand for a renaissance, or just the result of localised regeneration schemes. Caution is also required in analysing this data because it is of very recent demographic change and may not be

significant when longer term trends are considered. It may suggest a slight warming to the idea of urban living, but does not indicate a ‘mass movement’. Further analysis of the 2001 Census is now required to see if these trends can be discerned nationally. (Data will be available from August 2002).

Attitudinal Data

A wealth of surveys, questionnaires and focus group activities have taken place in the UK over the past decade trying to elicit attitudes to urban living. These have attempted to find out why people move, what their motivations are, and whether they are happy with their choices. This body of work provides most of the evidence for those pessimistic about the potential of repopulation because the findings paint an overwhelmingly gloomy picture of the demand for the urban renaissance. This apparent contradiction between housing aspirations and reducing sprawl through compaction has been noted since compaction policies were first introduced, but given the major political and fiscal investment in the urban renaissance the case for confronting these attitudes is now stronger than ever.

A report written to inform the urban task force on attitudes to urban living reviewed current research on the subject and concluded: ‘For anyone seeking to promote urban repopulation, this work makes depressing reading since it suggests that anti-urban sentiments in the British public remain as strong as ever’ (Urbed, 1999). A similar conclusion was drawn by Champion *et al.* when they analysed this literature. They reported: ‘... the English are, by and large, a nation committed to living in the countryside or as near as they can get to it’ (1998, p. 70).

What both these reviews found was a mass of evidence showing people’s dislike of city living. As Schoon states: ‘The key urban hates, expressed in survey after survey, are high levels of crime, especially violent crime, bad schools, heavy road traffic and the noise and pollution which attend it, and a lack of greenery and open space. People want to escape from dilapidation and incivilities – graffiti, litter, rowdiness, out-in-the-open drunkenness and drug dealing. They do not like living close to places that are often noisy and crowded.’ (2001, p. 117). He goes on to add two other key issues: the fact that people want to park their cars near to their homes and racism. He had found in several surveys that people want to move out because there are ‘too many non-whites’ in inner city neighbourhoods. These studies all more or less tell the same story: English people dislike the physical aspects of urbanism related to built-up, congested cityscapes, and also perceive urban social problems as leading to harsher lifestyles.

Unsurprisingly, in contrast, most people see rural or ‘small town’ living as representing a quiet, tranquil existence. Almost all research in this area shows a preference for small town, village or country life. For example, a survey carried out for the government’s Countryside Commission, found that while less than a quarter of the population resides in the countryside or a village, 54 per cent of all adults wanted to live there while only 6 per cent would prefer a home in the inner city (quoted in Schoon, 2001). This view tallies with results of research asking people why they might leave urban areas. Schoon states: ‘Would-be urban emigrants see smaller and rural communities as kinder, less stressful and more

closely-knit places with a stronger sense of community. They are looking for a change in the social, as well as in the physical, environment. The village is idealised by millions as a place where everyone is known and where the class struggle is suspended; differences in wealth do not cause the same envy and tension as they do in cities. Real villages may not be at all like that but the dream lives on.' (*ibid.*, p. 107).

A similar picture emerges when people are asked about the types of home they would like (Levitt, 2000; Harrison, 2000; Day, 2000). Recent research by opinion poll company, MORI, for the Commission for Architecture and the Built Environment surveyed 1000 people in random locations in England and asked where they would most like to live (Telegraph, 2002). They were shown a sample of dwellings characteristics of different urban settings. The results were that a bungalow in a seemingly suburban or rural setting was the most popular (30 per cent) followed closely by a traditional village home (29 per cent), a 1930s semidetached house, Victorian terrace, a modern semi-detached house, a loft apartment (2 per cent) and finally a tower block, in which no-one wanted to live.

Perhaps a glimmer of hope for the urban optimists can be found in national research into people's satisfaction with where they live. In the recent national research on housing attitudes 87 per cent of households reported general approval with their locations, and this percentage has risen in England over the last decade (quoted in Todovovic and Wellington, 2000). But even this research shows that urban residents are less satisfied overall than their suburban or rural counterparts (*ibid.*). Breheny had noted this trend in the mid 1990s, also quoting findings from the British Housing Attitudes survey showing that there is a clear progression with the lowest levels of satisfaction in urban centres and the highest in the most rural areas. But even in 98/99, 16 per cent of heads of households in urban areas expressed dissatisfaction with their area, compared to only 7 per cent of households in suburban areas and 3 per cent of households in rural areas. Those who have analysed this data point out that there is a clear relationship between satisfaction and deprivation, and the most deprived areas are also mostly in urban settings. Satisfaction levels also drop with higher proportions of renters, unemployed, lone parents and homes in poor condition, all of which are disproportionately located in towns and cities (Todovovic and Wellington, 2000).

While there is little in any of this research to support the optimists' views, perhaps these findings should be treated with some caution. Most of the research takes the form of 'wish lists' and ignores practicalities of everyday life. The optimists argue that people need to make trade-offs, for example they need to be near work and schools, and urban environments provide these opportunities. Furthermore, as many of the reports cited above point out, most people do not move because of their area but for other personal or job related reasons. In fact, only one in ten people who move identify moving to a better area as the main reason for their relocation, and job reasons are the most important reasons for those moving into or within urban areas (*ibid.*).

Another perplexing counter-argument to the overwhelmingly negative attitudes reported in most research on this subject derives from an analysis of who has actually moved out of cities. Research by Champion and colleagues tried to determine if there were any specific underlying characteristics of those parts of cities that lost the highest proportions of their

populations. They found that the areas which fuel out migration most tend to be higher status areas. The more heavily losing areas had: above average proportions of well-off people in the family building ages (24–34); low unemployment rates; and high scores on social class and house price. The research also found that ‘Areas with less attractive characteristics tend to have less migrating populations, or at least more people who move only rather short distances.’ (1998, p. 34). In geographical terms, districts further from the core, not inner city districts, lost higher proportions of their populations. In-migration also showed similar patterns. The research found that ‘The characteristics which are associated with areas recording the most in-migration are a below average proportion of ethnic minority members, a strong representation of persons in professional and managerial occupations, above average life expectancy and a high level of negative equity.’ (Champion *et al.*, 1998, p. 38). These areas are clearly attractive to better-off people. Hence, in terms of perceptions of people fleeing inner cities to suburban or rural settings, the image is not accurate. What actually happened in the 1980s and into the 1990s was a lot of movement of the better-off, in ‘suburban’ districts. The core populations were moving far less, or only moving short distances. Champion *et al.* characterise this movement as a ‘general turnover effect’ by the better-off, rather than a fleeing from the harsh realities of urban life from inner city residents.

Yet another criticism of the attitudinal research given by the urban optimists is that much of this work is not sophisticated enough in picking up why some people are also attracted to cities, and also why city living might be right for certain groups of the population at certain times. Clearly the data show that large numbers of people do move into cities, but in terms of assessing demand for the renaissance, it is difficult to get accurate information explaining why. Schoon states that ‘Opinion surveys show … that towns and city living exert their own strong pulls. People put living near frequently served bus stops and train stations, being close to schools, shops their workplaces and leisure facilities such as cinemas high on their list of priorities. This explains why people are moving into cities all the time, even if there is faster flow in the other direction. (Schoon, 2001, p. 117).

Two groups often quoted as being more in favour of urban living are the young and single people. If the migration data is examined, 16-24 year olds are one of the few groups that defy the ‘counter-urbanisation cascade’ (Schoon, 2001). This group generally moves from smaller to larger places for work and further or higher education. The ‘single’ households which are also presumed to favour urban living more than the population as a whole are made up of childless households (these could be couples), the never married, the divorced and widowed. Arguments have been put forward that these groups do not require large houses, may not want large gardens and may be attracted to the social life of cities. They may also not have the benefit of double income and therefore not be able to afford much space.

However, evidence on whether smaller households are actually likely to prefer urban living is mixed. Some attitudinal research shows that, in an ideal world, they are no more likely to want urban living than other groups (CML, 2000). They still prefer larger houses with gardens if they can afford them, and have the same urban dislikes as other groups in terms of crime, incivility, congestion and over-development (Schoon, 2001). But other

research has found clear variations in attitudes on urban living with age. One survey cited younger people (under 30) from social classes 1 and 11, with no children as the group most likely to consider urban living. This group favour urban life and proximity to jobs and education (MRAL, 1995). And it is largely this group which characterise the ‘newly urban’ housed in some urban regeneration and demonstration schemes in England. Detailed data from Central Manchester highlights this. The core population of the city rose from less than 300 in 1988 to 3000 by 1995, and according to estimates it had hit 6000 by 2000 (Robson *et al.*, 2000). The area received massive investment in urban regeneration during this period. A survey of those now living in the area showed 40 per cent were single person households, over 50 per cent were two-person households, and only 3 per cent had children. Most were in professional occupations and worked in the city (95 per cent in Greater Manchester). There were also many students, with over 30 per cent of households including at least one student. Many of the households had moved from outside the region.

These data are important in England as a number of new models of urban living are currently under development and highlighted by the Urban White Paper. The main aim of these is to attract those with economic choices to live in central areas, i.e. those in professional and technical managerial occupations. Examples of such schemes are the CASPAR (City Centre apartments for single people at affordable rents) blocks in Leeds and Birmingham (JRF, 2000). These demonstration projects have been developed to attract single people and childless couples back into urban living, and demand has been high. Similar schemes in Glasgow have also proved popular (Rogers and Power, 2000, p. 244).

So far, this discussion has concentrated on whether people want to move in or out of cities and towns, but another important factor in the feasibility of the renaissance is the attitudes of existing urban residents to increased development within their neighbourhoods, especially at higher densities. Research on this subject was undertaken for the UK government looking at residents’ attitudes to urban intensification (Burton *et al.* 1998). The research asked people who lived in twelve intensified areas in the UK how the process had affected their neighbourhood. They were asked to comment separately on increases in activity (such as more people living in the area, working there or visiting) and development (in the form of new building, redevelopment, extensions etc.). The impacts of both forms of intensification were found to be negative, but activity intensification was seen to have had a far more detrimental effect than built development (see Figure 3.1).

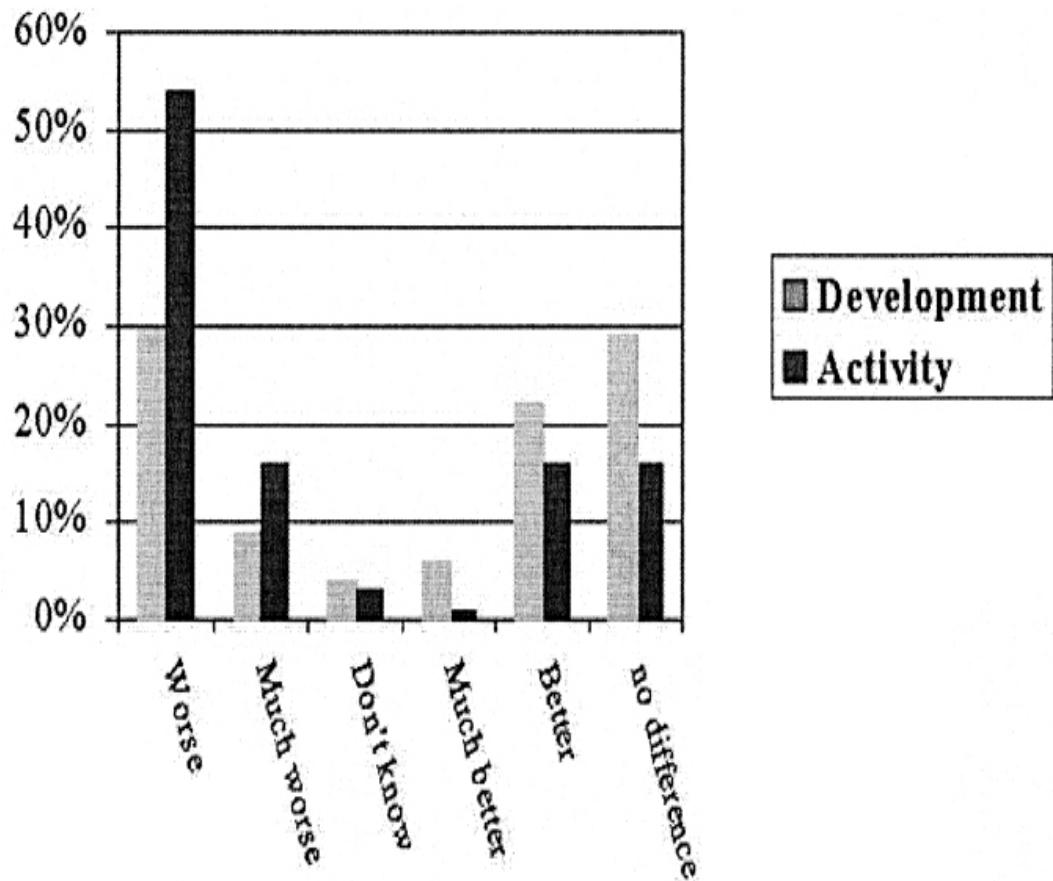


Figure 3.1 Perceived effects of development and activity intensification on the local area

Residents were also asked to comment on the effect of intensification on a series of specific urban issues (Table 3.2). Again, their responses were overwhelmingly negative, especially on the effects of intensification on traffic and parking. The only hints at benefits were to public transport and shops, which were seen as having been positively affected (although percentages were relatively low). This general picture does however mask findings in a few of the case study areas where responses were far more positive and residents reported that facilities had improved and community spirit was better due to more people living in the area.

The key difference in responses depended on many factors, including the character of the area being intensified and the type of intensification occurring. In general, less prosperous areas, with higher proportions of people in lower social classes (by occupation) were more positive about intensification. In these areas it was seen as modernisation and upgrading. However, in more prosperous areas especially lower density suburbs, it was seen as having a detrimental effect, and was associated with town cramming. The results also showed that intensification was more unpopular when associated with people from outside the area or with people of a different ethnic group, class and/or lifestyle to that of the existing residents. Particular dislikes were tourist or through-traffic, commuters, unemployed people, hostel tenants, students and foreigners.

Table 3.2 Issues affected for better or worse by intensification (% of respondents)

Issue	Better	Worse
Parking	4	66
Traffic	1	85
Air pollution	1	70
Noise	1	70
Road safety	3	71
Public transport	25	17
Education facilities	7	10
Health facilities	11	13
Recreation facilities	14	18
Shops	25	18
Amount of open space	2	47
Quality of open space	6	41
Job opportunities	11	20
Privacy	3	43
Amount of greenery	5	44
Quality of greenery	6	39
Crime	2	54
Local character	10	45
Neighbourliness	8	24

Source: Burton, *et al.* (1998)

Interestingly, density *per se* did not seem to affect people's satisfaction with their locality, but increases in density were significant. It appeared that those who had chosen to

live in low or medium density areas wanted them to stay that way, whilst those in higher density, mixed-use environments were far more amenable to future increased densities. Hence, the conclusion of the research was that overall the experience of intensification is negative. But in some places, if properly managed, further development can improve quality of life. This said the type of development and activity increases have to be carefully matched to the characteristics of the area. The research showed that the quality of development was far more important than absolute densities.

From these findings, the researchers developed the notion of ‘social capacity’ (Williams *et al.* 1996; Burton *et al.* 2000). This is a measure of the acceptability of urban intensification which was related not just to physical capacity in terms of built form, but also to ‘softer’ variables such as the character of the existing urban environment, and the type and quality of intensification taking place. This measure of capacity is important as it highlights that further urban development may lead to existing residents becoming more dissatisfied with the places in which they live, and potentially contribute to decentralisation trends. Hence, the message for those seeking to deliver an urban renaissance through higher density housing is very clear: this will only lead to perceptions of improvements in very specific circumstances.

In summary then, evidence of a ‘bottom-up’ demand for the urban renaissance from the English population seems slim. This is not to say that when questioned people do not want to see improvements in towns and cities, but they do not aspire to living there themselves. Although most people are satisfied with where they live, and most people live in urban areas, overwhelmingly, preferences are for homes in smaller less urbanised settlements. There may be exceptions for some groups in society, namely the young, childless or single, but even these groups do not necessarily desire high-density housing. Furthermore, those who already live in cities do not, on the whole, want more change. Unless further development is clearly associated with renewal in run-down areas, then most existing residents resist it.

The Prospects for Renaissance

Given this evidence then, what appear to be the chances of reducing sprawl and delivering an urban renaissance in England? Overall, it seems that we are potentially at a critical point in time, when the data are beginning to show very small glimmers of hope for the urban optimists, but preferences for economic and residential locations are still following predominantly outward trends. The Urban White Paper has certainly captured a mood of optimism about city life from some pro-urban sectors, but this is not shared by the population as a whole. Hence, big questions arise from the evidence surrounding the extent to which the mechanisms set out to achieve the urban renaissance match peoples desires in terms of lifestyle, because there is undeniably a mismatch.

A fundamental area of contention is density. The guiding principle of the White Paper is that ‘people must come first’, but it is clear from almost all research presented that people do not want higher densities, and this is a huge stumbling block. Whilst those who are pro

high-density housing often make reference to some of England's most popular and expensive older urban areas, characterised by Georgian and Victorian terraced homes, this quality has yet to be repeated in modern developments. For the majority of the population, high densities are synonymous with low quality. There are new models for urban living, such as loft-style apartments (often in solidly-built old industrial buildings) which attract much media interest, but even these are attractive to only a very small proportion of the population. Overall, examples of modern, high quality, high-density development are noticeably absent.

The opinions of existing urban residents also need to be given more attention. The clear message from those in low to medium density suburbs is that they do not want these areas to become more built up. If the White Paper and planning policy guidance on housing push for intensification in these areas, many people will become dissatisfied with their living environments. Newcomers to suburban areas do not want high-density homes, nor do existing residents want their neighbourhoods intensified. In this context, perhaps losing an area the size of Greater London over the next 20 years would be a reasonable price to pay for housing people at standards they are happy with and protecting urban areas from further unpopular intensification. Further, the types of suburban area which are described in the White Paper as 'wasteful' in terms of land use have been popular residential locations, for families in particular, for many decades.

This issue of further intensification is worth investigating by revisiting the issue of 'social capacity'. As stated above, a study on opinions of urban intensification led researchers to identify a notional 'social capacity'. This was described as a 'threshold' which was related to physical capacity, but not fully explained by it. It was also related to cultural expectations of different types of urban neighbourhood, and experienced differently by different groups of people. This concept is crucial for the success of the renaissance because it suggests types and levels of development above which 'renaissance' turns into over-development, overcrowding or over-urbanity. This conclusion was drawn from attitudinal research in localised areas. However, in their extensive analysis of 'the urban exodus' Champion *et al.* developed a similar hypothesis. After analysing in- and out-migration patterns, they suggest that two types of 'ceiling' can be imagined. These are purely physical constraints (housing, land etc.) and 'socio-environmental constraints' that reflect what the business community and residents alike are prepared to accept and beyond which they will 'vote with their feet', (Champion *et al.*, 1998, p. 69). These findings are crucial for the potential of the renaissance because they suggest that there may be a balance in terms of 'socio-environmental capacity' which is more or less self-regulating. If this is true, then this brings into question many of the assumptions on which the renaissance is founded because it suggests that if we keep trying to intensify our cities and towns this will accelerate people desire to move out. Those who can move will do so, and this will exacerbate existing social polarisation problems.

Elaborating this issue even further then, perhaps a point made by Champion *et al.* at the end of their research is critical. They concluded that 'the key questions arising from this evidence (on migration), concern the extent to which views on city life can be altered and under what circumstances any such change would make a real difference to patterns of

migration behaviour' (1998, p. 64). In this respect, many of the goals of the renaissance can be seen as attempting to change people's perceptions of urban living, rather than meet existing preferences. Hence, the White Paper can be seen as a major gamble by Government as it attempts to influence deeply embedded, long-held attitudes.

In some respects though, recent urban developments may have begun to reverse perceptions of modern, inner-urban living. There is no doubt that demonstration projects given developers and investors confidence (Sheehan, 2000). However, these 'special' projects account for only tiny proportion of new development. In targeting specific sectors of the population, particularly the young and childless they have begun to develop sophisticated and piecemeal solutions. The question is whether these are part of a longer trend, or just the fulfilment of the demand of a small niche market. What has also remained largely untested is a similar demand for urban family housing. In England there is no real model of urban living for families (although 'home zones' are a notable prototype) and the renaissance only offers the solutions of improving schools and facilities as potential 'pulls' to those with children. Also, it must not be forgotten that much in-migration comprises international migration and the motives for this are largely ignored in the White Paper.

A final comment of the potential for the urban renaissance can be gained by considering broader cultural and global trends and determining the effect these may have on population patterns within the UK. Clearly this paper has concentrated on a narrow set of issues and data sources for its analysis, but other macro trends are also crucial. In particular some geographers have suggested that there are reasons why we would expect reurbanisation in post industrial cities, citing the move away from manufacturing and towards personal and advanced producer services, changing demography, land use policy shifts and changing building technologies (Lever, 1993). In this respect the urban renaissance might help deliver the physical fabric required for more centralised living. It is also important for us to take a close look at international movements akin to the urban renaissance in other countries, such as New Urbanism in the USA (Pollard, 2001), and learn from their successes and failures.

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Chapter 4

Push-Pull Forces in the Spatial Organization of Greater London and South East England

Terence Bendixson

Introduction

London and its economy are shaped by a complex mix of forces. Global influences, such as the state of financial markets, determine employment and office investment, house prices at the expensive end of the market and immigration by foreign professionals. The capacity of the roads and, railways radiating from the capital, and the availability of houses along their routes, help to decide how many households move out and commute back or quit the capital altogether. The supply of homes, and the quality of what is on the market within London, help to determine how many households opt for city living.

The quality of schools, perceptions of street crime, travelling conditions on the *Underground* and on the railways are other factors that play some part in deciding whether the population of Greater London grows or falls. The important point about this is not that the workings of the economy of a world city may be too complex to describe, though probably they are, but that the economy and demography of a city such as London are under the influence of a wide range of constantly varying forces.

From New Towns to an ‘Urban Renaissance’

In the post-1945 period, London saw a long period of population decline. Traditional employers such as the Port of London shed labour and moved outwards. At the same time local authorities demolished street after street of dense Victorian terrace houses and replaced them with more spacious estates

modelled, to some extent, on the visionary planning of Le Corbusier. Meanwhile modern industries were expanding in towns such as Hatfield and Reading and new towns were under construction in most of the Home Counties. An exodus of Londoners was inevitable.

This picture remained roughly accurate until 1979 when the Conservatives under Mrs Thatcher wound up the new towns programme, reduced the scope of local authorities to build houses to let and removed obstacles to the building of exurban drive-in shopping centres and business parks.

Yet the Tories, notwithstanding their rural power base, found they could not ignore the cities. Riots in Notting Hill Gate, Bristol and elsewhere had drawn attention to racial discrimination and high levels of unemployment. The result was a new set of instruments all aimed at promoting private investment in inner cities. These tools included urban development corporations, tax holidays and garden festivals.

Nowhere in Britain was the effect of these policies more evident than in London. One by one the pieces of what is almost a new city fell into place in the former Docklands. The office skyscrapers of Canary Wharf, tens of thousands of homes, the Docklands Light Railway, London City Airport, the Jubilee line Underground extension and railway station at Stratford on the Channel Tunnel line were all decided upon and got under way. Even a rail link to Heathrow, Europe's leading airport, was put on the agenda. There was no grand design. There was no master plan. It was all done as bankers do deals, by taking one step at a time and relying on brilliant 'fixers.'

The swing of the pendulum from its position in the 1960s was by then complete. Whereas new towns set in regional plans were the flagship urban developments of post war governments, by the 1990s, top priority was going to reviving existing cities by bringing back into use sites that were disused, underused or abused. Someone coined the term 'urban renaissance'. In London the revival of docklands was extended downstream and renamed the 'Thames Gateway'.

New Labour – New Thinking

This was the situation when in 1996 Tony Blair's 'New Labour' government ousted the long ruling Conservatives. The new brooms arrested further out-

of-town retailing, set up an Urban Task Force and promised a white paper on cities. They gave Londoners, politically emasculated by Thatcher, a Greater London Authority and, thanks to the electorate, Ken Livingstone, a radical left winger, became Mayor. Later Labour published its unprecedented Ten Year Plan for Transport and promised a White Paper on airport development. The Mayor published a London plan and took the brave step of introducing road user charging, at £5 a day, in the city centre.

What are the implications of this for London? Within the context of the global economy and its effect on the City, the government and the Mayor had defined the main forces that would shape the capital over the next two or three decades. They are:

- London's urban renaissance, particularly in the Thames Gateway.
- The compact, high-density city goals of the London Plan.
- The capacity of radiating motorways and railways.
- The expansion of road user charging.
- Airport expansion in the south east.
- Social deprivation and inner city crime.
- Housing supply within and without Greater London.

London's 'Urban Renaissance'

London, like Britain's other big cities, faces a problem set out by the Urban Task Force in 1999:

How can we improve the quality of both our towns and countryside while at the same time providing for almost 4 million additional households in England over a 25 year period?
(DETR, 1999)

Key phrases in the report are:

- Compact urban development.
- Excellence in urban design.
- Priority for pedestrians, cyclists and public transport passengers.
- Developing on 'brown field' land and recycling existing buildings must become more attractive than building on greenfield land.

- Partnership with local people.

Protecting the countryside is currently understood to mean building fewer houses there and more in existing towns and cities. The target, as set out in John Prescott's Urban White Paper (DETR, 2000a), the first on urban affairs for 20 years, is to build, by 2008, 60 per cent of new houses on brown field land or in converted buildings. With respect to the capital, the White Paper said:

London stands apart as a city competing in a global context especially in financial and cultural activities ... It is the second most densely populated region in Europe. Despite having the highest GDP per head of any English city, it also has one of the lowest rates of overall employment and contains one of the largest concentrations of deprived areas. (DETR, 2000a, para 1.11)

London also featured in research on 'Cities: Competitiveness & Cohesion' (DETR, 2000b) published concurrently with the White Paper. In this report Professor Brian Robson and others drew attention to Greater London's population increase of 232,400 between 1991 and 1997 and to forecasts of a growth in population of 9.4 per cent (21.4 per cent in terms of households) for the period 1996 to 2021.

Robson *et al.* also observed one of London's peculiarities. Whereas rates of net out-migration from most British conurbations are highest for the better off and best qualified residents, 'London experiences high rates of loss of skilled manual and managerial workers, but holds onto professional workers better than other conurbations' (DETR, 2000b, p. 16). Gentrification is a London speciality.

Housing density and suburban living featured prominently in the Urban White Paper. The government noted that only 9 per cent of the English live in the centres of towns and cities at a density of around 85 people per hectare (36 per acre). Most live in places they think of as suburbs. (DETR, 2000a, para 1.14) However, the government went on to commit itself to pushing the density of new housing upwards towards the 35 to 40 dwellings per acre characteristic of many 19th century districts.

Elsewhere, the White Paper reports that the satisfaction of households for the places in which they live is lowest in cities, middling in suburbs and highest in villages. While rising satisfaction may be determined by declining

settlement size, the behaviour of neighbours and other factors, it is notable that it also correlates with declining density (see [Table 4.1](#)).

Table 4.1 Satisfaction with local area by type of area, 1998–1999

Area	Very satisfied	Fairly satisfied
Urban	35%	40%
Suburban/urban	42	40
Suburban	55	34
Suburban/rural	64	28
Rural	77	19

Source: DETR (2000a), *Living in Urban England: Attitudes and Aspirations*, Table 3.

This underlines the popular attitudes that face the promoters of an urban renaissance although, given the findings of Professor Brian Robson set out above, it may be that there is more satisfaction with living in ‘urban’ conditions in London than elsewhere in the country. Inner London undoubtedly has some very desirable neighbourhoods.

The London Plan

A draft of the Mayor’s Spatial Strategy was published in 2002, analyzing the state of the capital and set out his vision for its future (GLA, 2002):

- London is today experiencing phenomenal growth. This growth is without parallel in any other UK city. This rapid expansion, of population and jobs, stems from London’s exceptional dynamism, attractiveness and advantages in the new era of economic globalisation ...
- To sustain and improve London’s environment, this increase must be absorbed without expansion into the existing Green Belt or encroaching

on London's internal green spaces ... (and) without destroying the historic heritage of the city. (GLA, 2002, p. xi)

- Expansion of London into its surrounding region, the path chosen during much of the 19th and 20th centuries, would be environmentally unacceptable, particularly for the surrounding regions, and is ruled out by current government policy,' the Mayor concluded (GLA, 2002, p. xii).

Later on, the plan suggests that any attempt to hold back a forecast net growth of 700,000 people and 636,000 jobs by 2016 would 'degrade the economic efficiency of the city, decrease the quality of life of Londoners and damage its environment' (GLA, 2002, para. 1A4/5).

London's population growth is forecast to come from natural increase plus international immigration minus out-migration mostly to south east England. Significant increases are foreseen among 'rejuvenating' cohorts aged 15-29 and 45-59. Job growth is primarily expected in financial and business services, but also in hotels and catering, retailing, and health and education.

This vision of a higher density 'compact city' follows the reasoning of Lord Rogers in *Towards an Urban Renaissance* (DETR, 1999). However, it has not gone unnoticed that, at a time when high density cities such as Barcelona are being held up as models for London, residents of such places, like Londoners in the past, are moving to the suburbs.

The Capacity of Radiating Railways and Motorways

Trains currently carry 466,000 workers in and out of central London every day. The new Channel Tunnel line into King's Cross Station and Stratford in east London and Crossrail I, which is planned to connect places in the eastern and western Home Counties via Heathrow and Canary Wharf, will provide increased capacity.

The Independent Transport Commission (ITC) asked Professor Sir Peter Hall and Dr Stephen Marshall to consider the effect on land use in England of these and all the other transport proposals in the government's 10 Year Plan for transport. (DETR, 2000c)

Hall-Marshall assumed that the rail projects planned for London would be delivered, that long-distance commuting from counties at and beyond the fringes of south east England would increase and that within Greater London congestion charging would make London ‘more attractive to high-income groups … particularly small, childless households’ (ITC, 2002, para. 2.7.3).

House prices in London are higher than elsewhere in England. In 1995–1997 only one third as many houses were sold for less than £200,000 in Greater London as in remote rural districts. (DETR, 2000b) This contrast between London and remote country prices hints at one of the attractions of long distance commuting.

Road User Charging

Given that London’s roads are already crowded, even though 40 per cent of London households do not own cars, increasing the population could make driving even more difficult. Might it even help to push some people out of London? The Mayor’s solution is to reduce driving and promote travel on foot, by public transport and by bicycle. The £5 a day charge for entering central London introduced in February 2003 was a significant step in that direction. By cutting road traffic in the centre by about 17 per cent it has created opportunities for improving bus services and creating street environments much less dominated by congested traffic. Two possible extensions of road user charging have been mooted. One is fashionable Kensington and Chelsea just to the west of the existing zone. The other is Heathrow airport where charges would deter driving by staff and passengers and, if the Treasury allows it, help finance additional airport rail links.

Airport Expansion

Heathrow Airport in west London employs, directly and indirectly, 102,000 people and, with its worldwide connections, is a major attractor of investment. At the end of 2000, Heathrow was handling 64 million passengers a year (mppa) and London’s five major airports (including Heathrow) were handling 116 million. Forecasts by the Department for

Transport of unconstrained demand show London's total rising to 300 mppa by 2030 (DfT, 2002).

If Heathrow, with Terminal 5 under construction, gets a new runway, its capacity could rise to 116 mppa. Given the airport's location inside London, this would add to noise nuisances, but keep some of the additional 12,000 airport jobs within the capital and thereby contribute to the goals of the Plan (DfT, 2002, [Table 7.5](#)).

Another option is to expand at Stansted in North Essex (DfT, 2002, paras. 9.33 to 9.35), and this would fit well into the London-Stansted-Cambridge growth corridor set out by government in its Regional Planning Guidance for the South East. Another possibility is a completely new four-runway airport in the Thames estuary in Kent (DfT, 2002, Table 11.4). Such a site could be linked to the Channel Tunnel railway and have a positive effects on regeneration in the Thames Gateway, the centrepiece of Greater London's urban renaissance. However, like expansion at Gatwick, it seems to be an improbable choice. Accessibility from the west and north of England would be poor.

A White Paper on airport expansion, expected late in 2003, will announce the government's decision. Heathrow is a strong candidate because of its advantageous position within Greater London and the scope for railway connections to the West Midlands and the South West. Congested road access is a problem but the Mayor is likely to address that with road user charging. This leaves the issue of Heathrow's extensive noise footprint and the powerful opposition it creates to expansion. Stansted in Essex, though also opposed on environmental grounds, is accordingly the front runner.

Social Deprivation and Inner City Crime

The three districts with the highest proportions of deprived residents in England are in London. They are the boroughs of Hackney, Tower Hamlets and Newham, all in east London (DETR, 2000b, Table 8). Unemployment, low incomes, poor housing, high rents, low achievement at school, poor health and high levels of street crime are all characteristic of such boroughs. But wealthy parts of London such as Kensington and Chelsea also contain wards that are in the poorest quintile in the country (K&C, 2002).

Districts subject to such deprivation create two distinct kinds of movement: those living in them who can move out do so; and the social conditions within them deter all but the most courageous gentrifiers and those with no choice from moving in. In the context of the Mayor's vision for Greater London, such neighbourhoods contribute to a high density city where much travel is on foot or by bus. However, their reputations generate a sense of fear and anxiety that spreads beyond their boundaries.

Discussion

A secular change? London has been growing in population and extent for hundreds of years. After 1945 the population within the capital began to decline as increasing numbers of those seeking suburban lifestyles moved (or were moved) beyond the metropolitan green belt. Since the 1980s, however, this pattern has changed and in 2002 Greater London was estimated to be both gaining and exporting about 51,000 people a year (GLA, 2002, para. 1A 15). In fact, the high growth in jobs in financial services characteristic of the 1990s, had by then already begun to turn downwards. However, assuming that, in due course, the financial markets revive and that when they do global trade will again increase, hiring will presumably replace firing. Meanwhile Britain's relatively buoyant economy, and perhaps the attraction of the English language, are helping to keep the inflow of economic migrants at a high rate. The Mayor's growth forecasts depend on both.

An aspect of this pattern could be that long distance commuting and suburban lifestyles are losing some of their former attractiveness. Professor Andrew Daly, in a review of factors underlying travel for Rand Europe in January 2003, noted the emergence internationally of a distinct new, non-car owning, inner city lifestyle. (Rand, 2003)

Perhaps the suburban dream is becoming a car-dependent suburban nightmare. Given the frustrations of commuting to and within very large cities, given the growth of jobs in sophisticated business services that need to be 'where the action is', and given too the excitements and stimulation of living in a vibrant, 24-hour 'continental' city, perhaps the emergence of a new thirst for city living should not come as a surprise.

Continuing decentralisation? Sceptics take the view that the current strength of factors that pull people to London is temporary. They grant that

growing numbers of young resident professionals and other small households are gentrifying the inner boroughs, occupying warehouse conversions and buying tens of thousands of new riverside apartments. They note too that London's cosmopolitan character makes it attractive to well-to-do business people from South East Asia and India. On the other hand, they also argue that larger numbers of lower middle class English households plus refugees from Eastern Europe, the Balkans and the Middle East, will, as they prosper, want to move from the inner city to higher status and more spacious homes in the suburbs and the Home Counties. In this scenario London will revert, before long, to being a net exporter of people.

Housing supply A key issue is whether the house builders, assisted by the Mayor, deliver sufficient affordable homes to maintain the quality of essential public services. Success in this endeavour promises not only to expand London's residential capacity but also to offset house price inflation.

No less important is the reluctance of the Home Counties to permit the house builders all the plots they want and Mr Livingston's undertaking to minimise 'the need for London's employment to be supported by increased commuting' (GLA, 2002, para. 1B.17). If the Mayor can deliver on what he has promised, and it is a big if, he may indeed slow the rate of London's longstanding diaspora.

Higher commercial and residential densities will be essential to delivering such a future and, with the ubiquitous Lord Rogers as his Chief Advisor on Architecture and Urbanism, the Mayor places much emphasis on high quality design as a painless path to liveable dense development. The plan links higher residential densities to convenient public transport and proposes 240 to 435 dwellings per hectare in the central area, 55 to 110 dwellings in inner boroughs and 30 to 65 dwellings in suburban town centres.

Road user charging Can the Mayor also square the circle and combine higher commercial and residential densities with reduced travel by car and less nuisance from road traffic? Everything turns on whether cars, those symbols of freedom, can be subjected to further management and control. The introduction in February 2003 of the £5 a day charge to drive into central London suggests that they can.

Furthermore, the Mayor's ability to exercise leadership and implement the unthinkable has had a powerful effect on political opinion throughout Britain.

Road use charging may still be controversial but it can no longer be seen as infeasible. It could be an idea whose time has come. There are other ideas on similar lines. Britain's first inter-city toll road is nearing completion near Birmingham and a system of GPS-based charges is planned for heavy trucks. Alastair Darling, the incumbent Transport Secretary, may be nervous about enraging motorists, but one scenario suggests that national road user charging will become unavoidable because of worsening congestion and a need to free transport of all forms of tax-funded expenditures. With public expenditure rising and revenue falling, the idea of making all forms of transport self-financing is bound to appeal to a Treasury under siege.

Road user charging could thus be the key turning point that leads to an enduring change in the geography of London. It could at the same time reduce the domination by cars of a high density, 'continental' city, provide investment funds for public transport and increase business efficiency. However, whether or not this is the case is unlikely to become clear until about 2020.

(This paper does not reflect the views of the Independent Transport Commission.)

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Chapter 5

Knowledge, Decisions and Urban Form: Implications from the Socialist Calculation Debate

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Introduction

Most discussions of land use problems and the question of urban form in particular are dominated by a market failure discourse. At the core of this discourse is the notion that, absent effective government land use planning, market processes will lead to socially sub-optimal results. This mistrust of market forces draws heavily on the framework of neo-classical welfare economics and its claim that externality and collective goods problems preclude the effective allocation of environmental goods by private markets. Protagonists on opposite sides of the contemporary urban form debate have in turn cited variations of the collective goods rationale for government land use regulation in defence of their preferred categories of urban design. On the one hand, critics of urban sprawl have claimed that excessive loss of agricultural land, open spaces and the promotion of automobile reliant development are clear instances of market failure that need to be corrected by policies encouraging higher density development. Critics of compact cities, on the other hand, have maintained that market processes may lead to excessively high-density agglomerations characterized by air and water pollution, alongside other externalities associated with the close contiguity of urban life.

Notwithstanding the relevance of public/collective goods problems to land use planning this paper suggests that the case for relying on market processes may be much stronger than is commonly recognized. The preoccupation of the urban planning literature with market failure hinges on a

lack of attention to the fundamental epistemological differences that distinguish the orthodox neo-classical analysis of markets from those of the Austrian school of thought. These differences have their origins in the so-called socialist calculation debates of the 1930s and 1940s which pitted the Austrians' Von Mises and Hayek against Lange, Taylor and the proponents of market socialism. This paper explores the significance to urban planning of the socialist calculation debates from an Austrian perspective. The analysis suggests that urban policy debates should cease to focus on the search for an optimal urban form and should instead examine the institutional arrangements most likely to generate experiments in urban living. In doing so, the paper makes the case for the greater use of property rights or free market approaches to a variety of urban planning issues.¹

The Socialist Calculation Debate

The socialist calculation debates have their origins in a confrontation that took place in the 1930s and 1940s between Von Mises and his follower Hayek and market socialists such as Lange and Taylor. The Misesian argument against socialism was that, following the abolition of private property and the introduction of a centrally planned economy, government planners would be unable to make calculations of economic value owing to the absence of a set of relative resource prices. Seen in this light, the economic problem is not merely a technical issue of discovering which goods *can* be produced under existing technology. Rather, the problem is primarily an allocative one of deciding which goods *should* be produced and *how* in light of conflicting individual preferences and multiple competing alternatives for the use of the *same* production inputs. In order to determine how much of a given commodity to produce (how much steel, for example) and how to allocate such commodities between competing uses (how much steel to car production, how much to aircraft, nails, girders etc), economic actors need to calculate the maximum difference between output value and input costs. Without access to market prices for competing inputs and outputs, however, decision makers lack the capacity to determine which of all the possible combinations of resource uses should be adopted. According to Von Mises, such information could *only* be generated through the exchange of private property rights in the means of production and because market

exchange relationships and hence relative prices would be abolished under the classical socialist model, rational calculation of economic value would thus become impossible.

Lange and Taylor were widely thought to have refuted the Misesian position when they noted that if the informational conditions underlying the neoclassical general equilibrium model pertained, then government planners would indeed be able to allocate resources efficiently (Lange and Taylor, 1938). Under conditions of perfect information/perfect competition, where knowledge of production possibilities, consumer preferences and hence relative resource scarcities is objectively *given*, the same information used by market participants would also be available to government planners. Planners, therefore, could perform the function of the ‘Walrasian auctioneer,’ adjusting prices up or down until equilibrium was achieved. In this manner a socially optimal allocation of resources could be realized by instructing plant managers what to produce and by setting prices so that marginal revenues equalled marginal costs. Indeed, for Lange and Taylor such procedures would be *more efficient* than a system based on private property, because real world markets do not meet the criterion of perfect competition and require the complex paraphernalia of contract which would not be necessary under a government-administered system (see also Lerner 1934, 1944).

Lange and Taylor’s response to Von Mises demonstrated the apparently counterintuitive conclusion that the neoclassical economic model, often used to justify market resource allocation, was equally compatible with support for a planned economy. Subsequent textual analysis, however, and the actual experience of central economic planning in Eastern Europe and elsewhere, suggested that far from defeating their position, Lange and Taylor had misinterpreted the Mises/Hayek argument and had failed to address the fundamental question posed by the Austrian school (see Vaughn, 1980; Murrell, 1983; Lavoie, 1985; Blaug, 1993; Boettke, 1997; Hodgson, 1998).

The argument advanced by Von Mises and later elaborated in more depth by Hayek (see Hayek, 1945, 1948, 1978) was *not* that government planners would be unable to set prices *per se*, but that they would have no rational means of knowing whether they had ‘got the prices right’. For Von Mises and Hayek, the primary economic problem facing society was *not* the one examined by the general equilibrium model, i.e. of allocating resources under static conditions where information is perfect and where appropriate

production techniques and relative scarcities are known in advance. On the contrary, the task of attaining economic co-ordination occurs under dynamic conditions of uncertainty, where relative scarcities are subject to constant change, information is highly imperfect and fragmented into often contradictory ‘bits’ which are dispersed amongst a myriad of different actors (Hayek, 1945, 1948, 1978). Of course, some objective information may be made available in a centralized form, but even in the presence of such data, different people will interpret the implications to be derived from the same data in different ways. Under such conditions, decision makers require the constant feedback provided by the profit and loss account in order to learn and relearn about the success of their own subjective interpretations. By equating the case for markets with equilibrium conditions, therefore, Lange and Taylor did not even begin to address the Austrian argument against government planning because both Von Mises and Hayek *did not accept the underlying assumptions on which the neoclassical model is based* (Vaughan, 1980; Murrel, 1983; Lavoie, 1985; Blaugh, 1993; Boettke, 1997; Hodgson, 1998).

From an Austrian perspective the prices generated spontaneously through competitive market exchange perform two important epistemological functions, which *cannot* be replicated by a government planning mechanism. First, the competitive market acts as a *discovery procedure* in which contradictory ideas widely dispersed amongst individuals and firms are constantly tested against one another. Entrepreneurs *do not* start from a position of knowing what goods to produce, how to produce these goods, in what quantities and at what price to sell, but acquire such knowledge over time. Meanwhile, consumers *do not* start from a position of knowing what they want but are constantly re-evaluating their preferences in the light of the changing offers continually presented by competing entrepreneurs. A discovery process unfolds, however, as the profits and losses generated by the constant interaction between consumers and firms are noticed by neighbouring actors who imitate the behaviour of the successful and learn not to make the same errors as the unsuccessful. In this manner the price system operates through a rippling effect, spreading information about more and less successful courses of action across the overlapping perspectives of different individuals and firms (Hayek, 1945, 1948, 1978). Government planners, by contrast (democratically elected or otherwise) could never perceive and respond to all the subjective economic opportunities dispersed amongst a

myriad of actors who have the freedom to exchange property titles in the market.

Second, the market process acts as co-ordinating mechanism in which the changing ideas and behaviours of individuals and firms are constantly adjusted to one another through the medium of the price system. As knowledge ripples out from a multiplicity of decision-making nodes, the structure of relative prices that emerges enables people to discover what goods are more or less scarce and to adjust their behaviour accordingly (shifting from more to less expensive options, for example) without ever having to be conscious of why this is the case. As Hayek (1948, p. 86) explains, the great virtue of this process is, ‘the economy of knowledge with which it operates, or how little the individual participants need to know in order to be able to take the right action.’ For a planning mechanism to achieve an equivalent level of co-ordination would require that planners be consciously aware of *all* the relevant facts necessary to secure co-ordination between the multitude of components that form a complex economic system. It is, however, precisely the inability of planners to have access to the constantly changing circumstances affecting the behaviour of individuals and firms, owing to the cognitive limits of the human mind that prevents conscious co-ordination of this type. In markets, by contrast, the constant process of feedback embodied in the changing structure of relative prices facilitates a process of mutual adjustment between people who never actually meet and *cannot* know in sufficient detail the circumstances of their fellows.

Lange and Taylor misinterpreted the Mises/Hayek argument by implying that it was concerned primarily with the computational problem of planning, i.e. the impossibility of solving a massive number of simultaneous equations without computers powerful enough to process all the relevant data. For the market socialists such problems could conceivably be overcome if computer technology was to develop sufficiently.² For Mises and Hayek, however, the argument against planning was never simply a matter of mathematical dexterity, but centred on the inability of government agencies to know *which* information to process through the relevant computers, however prodigious their computational capacity. It is precisely the tacit, subjective and often contradictory nature of the relevant data dispersed amongst a myriad of different agents that precludes any central attempt to replicate the results of private property exchange. Only under private ownership of the means of production can individuals and firms make bids for resources reflective of

their own ideas and subjective interpretations and only under such a system can these ideas be tested competitively against one another.

Recognizing the advantages of the market system in the above light is not to argue against the genuine social benefits that can be derived from more hierarchical/bureaucratic forms of organization. On the contrary, the competitive market also produces planning organizations that seek consciously to co-ordinate their activities within a particular sphere. As Ronald Coase (1937) pointed out, corporate firms arise when the transaction costs of relying purely on decentralized pricing systems are too high. Rather than have each individual decision conducted on the basis of spot contracts, activities within the firm are often based on hierarchy of command mediated via a unified management system. There comes a point, however, where the cognitive limits of the firm are breached and where more flexible competitors better able to make use of the price system and knowledge of changing conditions exhibit a competitive advantage. The competitive market process is a multi-purpose instrument that can be used to discover and rediscover in an open-ended manner how much conscious coordination there should be. As Coase (1992, p. 716) puts it: 'To have an efficient economic system it is necessary not only to have markets, but also areas of planning within organizations of the appropriate size. What this mix should be we find as a result of competition.'

Socialist Calculation and the Question of Urban Form

Most contemporary discussions of urban planning are premised on the assumption that market failure is pervasive and that comprehensive regulation is required in order to shift the pattern of land use towards the social optimum. The alleged sources of market failure in this regard are well known, the most important of which being the existence of externality and collective goods problems. Two sources of externality in particular are considered to provide a *prima facie* case for government intervention. First, private landowners and developers fail to take into account social negatives such as loss of open space or increases in congestion and pollution brought about by their decisions, as these are not reflected in the market prices of new urban developments. The price system, therefore, represents at best a highly imperfect guide to the costs and benefits associated with land use

experienced by society as a whole. Second, land use decisions are to a significant extent *interdependent* in nature with the operation of market processes influenced by communal services or public goods functions such as transport infrastructure, which affect market conditions overall. Because land use decisions may have a variety of ‘knock-on’ effects or network externalities for a host of other actors the anarchic decisions of dispersed private property owners will not be sufficiently coordinated without some form of central intervention. Land use planning, therefore, is considered to have an important role to play in terms of providing information to market participants (about land use trends, population patterns and public infrastructure decisions such as the provision of trunk roads, schools and hospitals) and in regulating the actions of private actors in order that they may be effectively integrated with one another.

Traditionally, such arguments have been used to justify government land use planning in order to internalize externalities at the level of the individual town, city or perhaps even region. More recently, however, such arguments have been scaled up to include the impacts that urban areas themselves have on the wider environment. Prominent in the latter category has been the claim that towns and cities and the residential and transport patterns, which they generate are, to a greater or lesser extent, important contributors to the emission of greenhouse gases such as carbon dioxide and hence the phenomena of climate change (see for example, Haughton and Hunter, 1994).

It is in the above context that the question of urban form has assumed a particular prominence in the contemporary planning arena, where a variety of policies have been advanced to internalize the externalities associated with urban land use. At the forefront of this debate has been a confrontation between those highly critical of the environmental effects of low-density commercial and residential development, pejoratively described as urban sprawl (see, for example, Newman and Kenworthy, 1989; Rogers *et al.*, 1999), and writers who are equally critical of proposals to encourage more compact development patterns (see, for example, Crane, 1996; Hall, 1998). The consistent theme uniting this otherwise contradictory literature is the notion that sub-optimal land use patterns stem from a combination of market failures and government policies that reinforce such failures by shifting urban land prices further away from the socially optimum level. The primary task of land use policy, therefore, is to devise an appropriate set of carrots and sticks (via taxes, subsidies and regulatory controls), correcting the relevant

externalities and altering the incentives facing private decision makers in line with those of an optimal urban form.

Viewed from the Austrian side of the socialist calculation debate, the controversy over urban form in the current planning debate is, however, largely irrelevant to the nature of the issues at hand. Seen in this light, the fundamental issue is not merely one of trying to change the incentives facing decision makers in accordance with a predefined social optimum, but of discovering and rediscovering in an essentially open-ended manner what the appropriate values are. These will include changes in technology, working patterns, income levels and consumer preferences, which may shift the subjective patterns of the trade-off about the content of the desired environmental goods and which may be perceived in diverse ways by different decision makers.

Difficulties of the above genre are manifest in the polarized nature of the debate over urban form. First, there is no consensus on what the optimal urban form is. On the one hand, advocates of compact settlement approaches as the best way to tackle problems of air pollution and congestion argue that higher density developments reduce the need for car-based travel and longer commuter or shopping journeys. According to this view, higher density developments reduce the need for auto use because people are able to access a wider range of services within a smaller surface area and make greater use of public transit (Newman and Kenworthy, 1989; Rogers *et al.*, 1999). Critics of compact cities, on the other hand, maintain that in certain circumstances, higher density developments may increase car use because shorter origin-destination trips reduce the average cost per trip. Cheaper trips may mean more vehicle trips, so the total vehicle miles travelled may increase when compared to lower density areas where journeys, though longer, tend to occur less frequently (Crane, 1996; Gordon and Richardson, 1997).

Second, there is equally little consensus with regard to the sources of existing malfunctions in patterns of urban development. Advocates of compact development argue that the tendency toward low-density sprawl may be attributable to policies which subsidize such patterns through the development of unpriced highway systems that encourage automobile use and the provision of public infrastructure such as sewerage systems at below the relevant social cost (Rogers *et al.*, 1999). Supporters of lower-density development, by contrast, note that mass public transit facilities have also

been the recipients of government largesse (Gordon and Richardson, 1997) and there is evidence that in some circumstances high-density urban forms may increase social overhead costs with regard to infrastructure provision (Ladd, 1992). The corollary of such disputes is a corresponding lack of agreement over the policies necessary to shift the structure of urban land prices in the direction of the desired social optimum. Should public transit be in receipt of greater subsidies and green field development taxed/discouraged through regulation, or should urban land prices be shifted in favour of lower density urban forms?

Difficulties of this nature encapsulate the essence of the epistemological argument against government planning advanced by the Austrians in the socialist calculation debate. The best way of dealing with the relevant uncertainties is not to plan for an optimal urban form, but to permit a wide variety of experiments in urban living, in which *contradictory* ideas can be tested competitively against one another. This may allow a discovery process to reveal which particular ways of organizing urban areas work best from the subjective view of their inhabitants as signalled by the relative willingness to pay for different types of development schemes. Given such experimentation and market-generated feedback signals, the claim that planning is required to arrive at an appropriate social optimum collapses. It is then reduced to the infamous dictum of the socialist economist Maurice Dobb that planning can work, if only planners ignore consumer preferences.

The experience of previous attempts to secure a preconceived urban form does not bode well for those who seek to design the structure of towns and cities in order to achieve a particular set of environmental goals. As the case of postwar New Towns policy in the United Kingdom suggests, where such policies have been instigated, the results have often been contrary to their initial goals. This particular attempt to secure an optimal urban form aimed to create a series of free-standing towns built by the state on green field sites acquired under compulsory purchase and separated from existing urban areas through a series of green belts. The New Towns were designed to accommodate ‘excess’ population from the older cities and were to be self-contained, with the bulk of employment and service provision needs confined within their boundaries in order to discourage urban sprawl. In the event, however, planners’ predictions about the likely effect of future population and employment growth and transport pattern effects of the towns proved wildly inaccurate. Population expanded at a much higher rate than was

planned for and the towns, far from being self-contained, developed into major importers and exporters of population. Some became major urban centres in their own right attracting population and employment from elsewhere, while others became little more than dormitory towns. Indeed, short of imposing restrictions on freedom of movement resembling those enforced throughout the Soviet bloc, it is difficult to see how the goal of self-containment could ever have been achieved. In the face of such pressures the New Towns program was abandoned, although years after its initial goals had been made redundant (Simmie, 1993; Cherry, 1996).

The example of British New Towns policy illustrates the inability of land use planners to adjust their actions in light of constantly changing circumstances. In order for such adjustment to take place there must be a mechanism that communicates the changing nature of the subjective trade-offs made by individuals and firms and their subsequent actions to other individuals in order that they adjust their behaviour accordingly. The difficulty facing land use planners in bringing about such adjustment, however, stems from the absence of a competitive market process and comparative price signals that such a process produces. Without market-generated relative prices to guide their decisions planners are forced instead to rely on broad-brush statistical indicators and aggregate land use classifications. The attempt to determine an optimal level of residential density is typical of the efforts to generate the surrogate data that must be resorted to in situations of this type. The problem with relying on aggregate data in an attempt to quantify the relevant social costs and benefits, however, is that they are unlikely to reflect the subjective decision trade-offs as actually experienced by individual decision makers on the ground. As Hayek (1948, p. 83) put it:

The statistics which a central authority would have to use, would have to be arrived at precisely by abstracting away from minor differences between things, by lumping together as resources of one kind, items which differ as regards location, quality, and other particulars in a way which may be very significant for the specific decision. It follows from this that central planning based on statistical information by its nature cannot take direct account of these circumstances of time and place.

The experience of British Green Belt policy presents an apposite example of Hayek's point. The explicit aim of this policy is to prevent the outward growth of the larger urban areas, preserving environmental quality by minimizing urban sprawl. It is however, rarely acknowledged by planners

that the level of environmental quality *within* Green Belts varies dramatically. The London Green Belt, for example, while including the wooded hills of the Chilterns and the North Downs, also includes large tracts of land on the western and eastern urban fringes, consisting of abandoned gravel pits, quarries, and low-grade farmland/horticultural development. While there is clearly a public desire to preserve aesthetically attractive sites within easy reach of the city, it is equally the case that people searching for affordable housing might be prepared to see the relatively less attractive parts of the Green Belt developed for residential purposes. This point is of particular importance when considering the level of development that has been displaced into the deep countryside beyond the designated zones rather than taking place on the immediate urban fringe (Herington, 1984, 1990). Seen in this light, a blanket command and control policy such as the Green Belt is incapable of responding to the diversity of conditions that exist. Without being guided by a set of relative prices, which can highlight variations in subjective environmental quality among different sites, planners are unable to know where to allocate planning permission and to judge whether Green Belts add to or subtract from the desired set of environmental goods.

It is important to recognize that the difficulties discussed above are not, as is often thought, confined to the more technocratic or expert-centred forms of urban planning. So-called participatory or collaborative planning procedures that attempt to accommodate social preferences through widespread public consultation via surveys and citizens' juries (Healey, 1997) are prone to similar deficiencies. The primary difficulty here is one of articulating knowledge, much of which is tacit in nature. When asked to value the different elements that make up a given basket of goods an individual may not be able to explicate how much s/he values one good relative to another. To what extent is high-density development preferable to low-density development? How do the environmental costs of building houses vary from one green field site to another? Does the convenience of out-of-town shopping malls outweigh the aesthetic appeal of small town centre outlets? Such knowledge can only be revealed through the *act* of choosing among the competing alternatives that arise in the actual experience of peoples' lives. As Sowell (1980, pp. 217–218) has noted:

The real problem is that the knowledge needed is knowledge of subjective patterns of trade-off that are nowhere articulated, not even to the individual himself. I might think that,

if faced with the stark prospect of bankruptcy, I would rather sell my automobile than my furniture or sacrifice the refrigerator rather than the stove, but unless and until such a moment comes, I will never know even my own trade-offs, much less anybody else's.

The virtue of the market, therefore, as opposed to democratic planning, is that it is constantly updated as individuals choose between different courses of action and hence alter the structure of relative prices in line with the choices that they make. Without such prices it is difficult for both planners and participants alike to communicate their values to one another and to adjust their behaviour accordingly.³

Proprietary Planning and Experiments in Urban Form

The analysis thus far has challenged the wisdom of seeking to plan for an optimum urban form to tackle land use externalities. A primary implication of this argument is that, rather than regulating land use in accordance with any particular development pattern, attention should turn to an examination of the institutional processes that are likely to generate experiments in urban form. It is only through a process of competitive experimentation that the subjective costs and benefits associated with different bundles of land use externalities can be revealed through a process in which people can select the particular mix of environmental characteristics commensurate with an improvement in their quality of life. The question remains, however, what type of institutional arrangements is likely to result in such a process and to generate the necessary set of feedback mechanisms for decision-makers?

In answering the above question, it is important to re-emphasize that the case for greater experimentation in urban form does *not* challenge the notion of planning *per se*, but rather questions the legitimate sphere over which any *particular* planning model should be extended. The nature of land use externalities means that is important in certain circumstances to have a decision-making unit which takes a broader view than might be expected if individuals were allowed to dispose of their property entirely as they saw fit. In the specific case of urban form, it may well be the case that there is a need for institutions that can consciously plan the pattern of land development within a particular area. What is at issue, however, is the existence of a mechanism, which can subject such attempts at conscious design to a process of competition.

In one of his few published statements on land use planning Hayek (1960, pp. 351–352) put the issue very well:

Most of what is valid in the argument for town planning is, in effect an argument for making the planning unit for some purposes larger than the usual size of individually owned property. Some of the aims of planning could be achieved by a division of the content of property rights in such a way that certain decisions could rest with the holder of the superior right... Estate development in which the developer retains some permanent control over the use of the individual plots provides at least one alternative to the exercise of such control by political authority. There is also the advantage that the larger planning unit will still be one of many and that it will be restrained in the exercise of its powers by the necessity of competing with other similar units.

The assumption underlying the orthodox case for regulating urban form is that the larger planning unit of which Hayek speaks must necessarily be that of a government agency. This line of argument is based on the claim that government planning has an important role to play in co-ordinating the actions of private actors by reducing transaction costs in situations where there is a large number of affected parties. Such costs are thought to be especially important with regard to the siting of major infrastructure projects including roads and other public works considered to exhibit network externalities.

One way or another, most instances of market failure are problems of excessive transaction costs and the difficulty of enforcing contracts in large number situations. Transaction costs, however, exist in *any* institutional setting, so the identification of market failures does not provide an automatic justification for government intervention (Demsetz, 1969). Indeed, from the perspective of the Austrian school, the competitive market process is a multi-purpose instrument, which can evolve a variety of responses to deal with the existence of network effects in a manner that may be *more* effective than government action. The institution of the business firm is perhaps the clearest example in point. Firms are planning organisations that develop in situations where there are efficiency gains to be made from replacing the rule of decentralized pricing mechanisms and spontaneous order with a hierarchy of conscious direction that reduces the transaction costs and uncertainties involved in co-ordinating a large number of actors (Coase, 1937, 1992).

It is important to recognize, therefore, that the case for the market economy *does not* rest on the assumption of atomistic competition, where there is a free-for-all in which people can do anything they want. Rather, the

primary argument for the market as advanced by Hayek is that it is a realm of *voluntary planning* characterised by private property and freedom of contract. It is within such a realm of private contract that people may voluntarily associate into organizations that *restrict* their own behaviour in particular ways, in order to engage in acts of planning and social co-operation, that can serve the collective good. The proprietors of shopping malls, for example, do not typically allow a free-for-all on their premises, but define a set of *rules* governing the behaviour of retailers and shoppers alike, in order to benefit all of those who visit the mall. These rules are in turn subject to competition from other proprietors who may offer different sets of arrangements in order to attract customers. Seen from this perspective, planning organizations (such as firms) emerge out of the process of freedom of contract to cope with economic problems such as high transaction costs, externalities or network effects as and when these problems arise. The optimum scale at which the costs of such hierarchies (e.g. lack of flexibility because of excessive centralization) outweigh the benefits (e.g. a unified management system) is itself something that must be discovered and rediscovered, via open-ended competition between *different types of ‘planning regime’ arrived at through private contract.*

In the specific case of land use, there is a variety of private contractual devices that can be used to create appropriate planning units, internalizing the externalities associated with different residential densities, transport and infrastructure provisions and hence allowing the development of experiments in urban form. Foremost among these is the proprietary/private community where individuals contract into a set of collective or shared property rights offered for profit by institutional entrepreneurs. The potential of market innovations such as homeowners associations, condominium associations and private communities to tackle questions associated with urban form is increasingly being recognized in the United States. In 1962 there were only 500 such associations nation-wide, but the number had grown to almost 10,000 in 1970. By 1998, however, there were some 205,000 neighbourhood associations (involving 42 million) deploying mechanisms such as restrictive covenants. In the fifty largest metropolitan areas, more than one-half of new housing is built in the form of private neighbourhood associations and condominiums (Nelson, 2002).

The great advantage of the proprietary community model is that it may facilitate competition and experimentation between different communities

and lifestyles (low density versus high density, for example) offering various bundles of amenities on a range of territorial scales. While allowing for an element of planning, the property rights approach provides a clear feedback link to the knowledge and decisions of proprietary entrepreneurs through the account of profit and loss, and facilitates consumer choice among an array of urban designs. This enables a discovery procedure to reveal which particular development patterns work best in the view of the consumer. In turn, the structure of relative prices emerges from decisions to buy and sell stakes in proprietary associations. This enables the dispersed decisions of many different actors to be co-ordinated through a process of mutual adjustment; the prices paid for different bundles of land use restrictions transmit information about their subjective valuations by the population at large.

From the perspective set out in this paper, proprietary community models could perform functions analogous to those of the business firm and could constitute an effective mechanism for *reducing* transaction costs involved in the management of urban form. By creating a unified management system the formation of proprietary communities internalizes external effects within a given locality. In addition, the formation of proprietary communities would *lower the costs of coping with trans-local externalities* where there are a large number of affected parties as the formation of such communities *reduces the number of contracting agents* and facilitates market exchange at the *inter-community* level. Rather than have large numbers of *individuals* try to negotiate with one another over the location of a new trunk road, for example (situations that might well be prone to excessive transaction costs) negotiations could take place between the management boards of such communities, operating so as to increase the value of the relevant proprietary assets. Given conditions of private ownership and freedom of contract, proprietary associations would constitute a *market response* to high transaction costs.

In order for such an approach to operate effectively would require the radical step of transferring the majority of local services currently supplied by the state to proprietary associations. Within different proprietary organisations, alternative approaches may emerge to tackle the land use externalities associated with road use and other infrastructure. Some communities may, for example, allow access to road space free at the point of delivery, some may introduce periodic traffic bans, while others may introduce a system of road pricing. These decisions would be based upon

each association's entrepreneurial judgement of what would constitute the most attractive package from the view of potential residents and hence community asset prices.

It might be argued that the relevant process of competitive experimentation is already provided for by the decentralization of land use planning functions down to the various tiers of local government. In response, it should be noted that even in the most highly devolved governmental structures (such as those of the United States), central governments have increasingly sought to influence local land use decisions by tying government support to the adoption of centrally approved land use policies (Utt, 2000). In countries such as the United Kingdom, where the tradition of fiscal federalism is largely absent, centralizing tendencies are even more evident with most local land use planning functions subject to strict national guidelines.

From the perspective of the Austrian school, the case for the control of land use planning functions by local governments is subject to the more fundamental objection that local authorities are not necessarily the most appropriate jurisdictional unit to engage in effective planning. In many cases, local authority boundaries have been imposed on communities for political reasons that have little to do with their efficacy in managing land use problems. As such, local government planning is predicated on the suspension of competitive forces from below and thus eliminates the sort of discovery procedure that may be necessary to determine the appropriate level from which the issue of urban form should be approached.

In a market system of proprietary planning, discovering the appropriate size of the relevant planning unit would be dealt with through a process of competitive experimentation. If a proprietary community proved too small to gain the advantages associated with the internalisation of network effects, then its asset value might be reduced and it may seek to merge with other neighbouring communities. Likewise, if such organisations were to become excessively bureaucratic and more cumbersome than smaller, more decentralized communities might start to gain market share and the larger communities would be encouraged to downsize in response to changing market conditions and a fall in their relevant asset prices. In this way, market competition would subject different proprietary structures to a process of trial and error evolution that could adapt in a dynamic way to economic and technological conditions.

While there is no one optimal model of proprietary governance, there are strong theoretical reasons to believe that a system of private proprietary planning would tend to operate on the basis of smaller geographical units than present municipal governments. The bundling together of many services such as land use planning, fire protection, schools, leisure and recreation and their delivery by large municipal governments is largely reflective of the absence of competitive forces in government-administered systems. At present, if citizens are dissatisfied with a particular service bundle they have no choice other than to leave the relevant town or city. Under the market model, by contrast, it may become easier for citizens to find alternative service bundles provided on a smaller, more localized scale, as proprietary organisations would be subject to open competition. As Klein points out, proprietary communities would probably tend to de-bundle services to discover more specialised market niches with the result being an overall expansion in the number of nearby alternatives and a greater capacity to exercise the exit option (Klein, 2000).

The emphasis on increasing the scope of exit options beyond those currently available is of particular significance given one of the objections that is sometimes raised against private forms of land use planning. The focus of this objection is on the potential for the exercise of private forms of coercion that go well beyond the regulatory powers typically exercised by local zoning boards or local government planning agencies. Richardson (2002), for example, argues that while central government controls are often too onerous, and local government regulations still more so, there is often no more restrictive form of land use planning than that exercised by private homeowners association boards. Some private covenants go so far as to specify what flowers can be grown in the garden and even the colour of drapes. Such arguments echo the more pressing concern that private land use controls have in the past been used to enforce a number of anti-social practices, including racial segregation.

In an important sense these criticisms show how effective private forms of planning can be in internalizing externalities that have been neglected by orthodox government land use control. The fact that private developments have implemented these highly specific forms of community regulation suggests that they are much more sensitive to consumer preferences than centralized government structures. That said, the concern that private developments might encourage people to interfere too much in the lives of

their neighbours and to exercise unsavoury preferences (e.g. about race) is serious. As is usually the case however, where limiting the exercise of coercion is the principal concern, then the best option is to maximize the degree of competition in the system. Unsavoury preferences may find expression under any political or institutional system (racist zoning was once common in the United States), but under a competitive system the scope for such preferences to be imposed on the whole community is limited by the existence of the exit option. If the controls offered by particular proprietary associations become too onerous or unsavoury, then one would expect a profitable niche to open up for organizations offering a much more liberal set of communal rules. Historical experience from the United Kingdom suggests that a large part of the urban infrastructure developed during and after the industrial revolution was provided via private land use planning in a system which generated a greater diversity of controls than the subsequent government-dominated system (Davies, 2002). According to Davies, a sophisticated market in property rights and amenity values was emerging prior to the advent of government planning in the early 20th century with a range of different amenities and pricing structures. These ranged from luxury resort developments with highly prescriptive aesthetic controls to more basic environmental standards limiting only the most noxious land uses.

A further objection to the proprietary community approach stems primarily from communitarian and egalitarian sentiment. According to this perspective, the rapid growth of privately planned and managed developments, especially in the United States, is responsible for the degradation of the urban public sphere. Middle class groups in particular are fleeing the inner cities for the security of private and sometimes gated communities,⁴ isolating themselves from the wider society and leaving in their wake those who cannot afford to purchase a stake in these islands of privatopia. Some critics have even suggested that the establishment of private communities constitutes a threat to democracy itself as citizens lose sense of any communal obligations that are fostered by the sharing of local public services (Blakely and Snyder, 1997).

As Nelson (2002) has argued, however, far from resulting in the decline of communal and civic functions, private homeowners associations, condominium developments and private communities are springing up to rescue the public sphere from the chronic deficiencies of existing public sector management. Community-enhancing functions such as the maintenance

of clean and safe streets that have been so abysmally neglected by the political process are now being performed by private contractual associations and are better conceived as a market response to a government failure.

It is undoubtedly the case that many people who cannot afford to leave the filthy and crime-ridden streets that characterize many inner urban areas are at present being left behind. A two-pronged approach is required here that on the one hand increases the potential for people to exit from failing public services in the inner city, and on the other hand changes the institutional incentives facing those who deliver urban services so that they can be encouraged to improve their performance. Suburban private communities in the United States have had marked success in reducing crime and given that lower crime is perhaps the most significant improvement in quality of life that urban residents seek, ways should be sought to establish private forms of community management in the inner cities (Nelson, 2002). Insofar as there are residual concerns about income-related access, a far more effective mechanism would be to redistribute resources directly to low-income households, giving them the capacity to exercise choice in the market, rather than rely on the political process to arrive at a more inclusive urban form.⁵

Notwithstanding the considerable potential for the evolution of markets in proprietary urban planning, there may remain a category of goods where excessive transaction costs prevent an effective market from emerging. The emission of air pollutants, especially from mobile sources such as the private automobile, is a possible case in point. The Austrian perspective does not preclude a supplementary role for the state in tackling such externalities as a second-best approach. What it does suggest, however, is that rather than approach such problems by attempting to regulate land use in accordance with a particular urban form government action should, in so far as these can be identified, focus on specific external effects. In the case of air pollution, for example, introducing fuel taxes or road pricing mechanisms is likely to be a much more effective approach than attempting to control such problems by manipulating urban design. Taxes and pricing mechanisms, although unlikely to be set at the socially optimal level have the advantage of allowing individuals and proprietary organizations to adjust their behaviour in light of their own knowledge of local circumstances and subjective tradeoffs in a manner which would continue to allow experimentation with a variety of land use patterns.

Conclusion

This paper challenges the focus the contemporary urban planning literature with the notion of an optimal urban form. This paper has explored the institutional implications of the socialist calculation debate from an Austrian perspective. The analysis suggests that the epistemological deficiencies of government planning exposed by Von Mises and Hayek are also relevant to policy frameworks attempting to manage urban land use according to a predefined set of social and environmental objectives. The market failure discourse of neoclassical economics with its emphasis on the need to correct externalities neglects the importance of institutional mechanisms that may facilitate the discovery of what are the most relevant social and environmental values.

Whether the property rights and market solutions sketched in this paper provide the appropriate institutional alternatives to orthodox forms of land use planning remains open to question. What should be readily apparent, however, is the need to move away from a static framework, that assumes objective knowledge of urban land use interactions, towards a focus on the dynamic open-ended processes that are compatible with the underlying nature of urban systems.

¹ For a more detailed critique of the theoretical arguments advanced in support of government land use planning and environmental regulation more generally, from which the present paper draws, see Pennington, (2002). See also Pennington (2000).

² For a more recent statement of this argument, see Cockshott and Cottrell (1993). For an Austrian inspired critique from an author not known for his sympathy to free market economics, see Hodgson (1998).

³ For a more detailed critique of collaborative planning from an Austrian perspective see Pennington (2001).

⁴ The extent of gated communities is much exaggerated by their critics; only about 4 million of the 42 million people living in private communities are in gated enclaves (Nelson, 2002).

⁵ For a more detailed analysis of these issues, see the debate between the current author and the communitarian urban planner Charles Bohl in the Summer 2003 issue of the *Journal of Markets and Morality*.

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Chapter 6

The Thirty-Year's Experiment with British Greenbelt Policy in Korea: A Convergent Path to Sustainable Development

Sang-Chuel Choe

The Greenbelt Policy of Korea

Via rapid industrialization and economic growth beginning in the early 1960s, the population living in urban areas increased from 24 per cent in 1960 to 41 per cent in 1970s. Nowhere else in the world was the urbanization so intense and so compressed in time. The flow of people to cities has been at the flood stage for the last twenty years (Meier, 1970). The expansion of urban areas to accommodate them with low-density single-detached housing resulted in uncontrollable urban sprawl. About 700 hectares of farm land were encroached by urban development every year. It was also a time when land prices in Seoul soared as much as 200 times in a decade. The Greenbelt system was first introduced to Korea in 1971 under the name of the Restricted Development Zone (RDZ), largely borrowed from the British concept of the Greenbelt. The objectives in introducing the RDZ were to prevent urban sprawl, to protect agricultural land around cities, to preserve natural environment and to protect national security. Searching for a planning tool to meet all three of the objectives except the issue of national security, the Korean government examined the UK's Greenbelt policy. This had been tried by the Japanese government in the late 1960s but failed because of strong opposition from residents and landowners. Korea was under the dictatorial government of President Park and confrontation between the two Koreas was on the verge of a new war breaking out at that time. The Greenbelts were hastily designated around Seoul and thirteen other cities within a two-year period from 1971 to 1973 without the consent of local governments and with no citizen participation. The boundaries of 14 Greenbelts were clandestinely delineated on a map of 1:50,000 by the Ministry of Construction. Also, Korea added one more objective to what the British Greenbelt policy was aiming for. As more than 40 per cent of the nation's population was then living within the range of ground artillery attack from belligerent North Korea, the RDZ was thought to help population dispersal from the Seoul metropolitan region.

From the start of introducing the British Greenbelt system, the conceptual and practical flaws of the Korean RDZ were built in. It was a planning tool imported from the UK and then located within a Korean planning system largely based on the US zoning model. As

succinctly pointed out by the Town and Country Planning Association of UK in its commentary on the RDZ policy reform in Korea, some of Korea's current planning problems stem from Korea's emphasis on importing solutions rather than engaging in any wider debate about what is suited to the country's unique landscape and culture. Foreign frameworks are introduced and then modified as problems and contradictions become apparent. This gives Korean planning a pragmatic but also a reactive flavour (Town and Country Planning association, 1999). The selection of Greenbelt cities and the guidelines of boundary delineation were not well perceived and deviated considerably from the original inventor of Greenbelt policy. According to Circular 42 of the British Ministry of Housing and Local Government in 1955, the five criteria for the designation of Greenbelts in the UK were stated as follows: i. Greenbelt should not apply to small towns; ii. Greenbelts are unnecessary where growth pressures are weak; iii. Greenbelts are inappropriate where there is uncertainty over the pattern of future development; iv. Greenbelts should not be too large for the purpose they are intended to serve; and v. there should be room left for some increase in population in towns surrounded by Greenbelt (Elson, 1986). When the Greenbelt system was introduced to Korea in 1971, the above criteria were not seriously taken into consideration, planting seeds for the more recent debate on the reform of Greenbelt policy.

The Greenbelts were designated not only in large cities (Seoul, Busan, Daegu, Gwangju and Daejon) but also in the small-and-medium sized cities where no development pressure had ever existed. Some cities drew the boundaries of the Greenbelts too tightly with little room left for urban expansion at the initial stage while other cities kept designated too much land for future development (see Map 1). The boundaries of Greenbelts were hurriedly drawn without any scrutiny in the field and behind closed doors. As examples, a village might be divided in the middle by a Greenbelt and in some cases the Greenbelt line would crisscross a single building lot. The population in the RDZs dropped by about one-half from 1,400,000 in 1971 to 740,000 in 1998. Punitive and rigid Greenbelt regulations made it impossible for the residents to build a new house or even to repair a crumbling roof of an existing house. As nobody wants to buy a house or land within the Greenbelts, land prices have plummeted to about one-fifth compared to land prices on both sides of the Greenbelts. However, nobody seriously listened to the hardships and relative deprivation of the Greenbelt residents in the Greenbelts. Successive governments passively neglected the voices of residents and land owners in the RDZs for nearly three decades, rather than opening up a very contentious issue. Strong opposition to the reform initiative of the RDZ policy came from people outside the RDZs enjoying open and green space at someone else's expense and from environmental activists who advocate the preservation of the green and natural environment, regardless of who pays the cost. However, it was no longer possible to put the lid on the Greenbelt issue for long after the civilian government was restored in 1993.

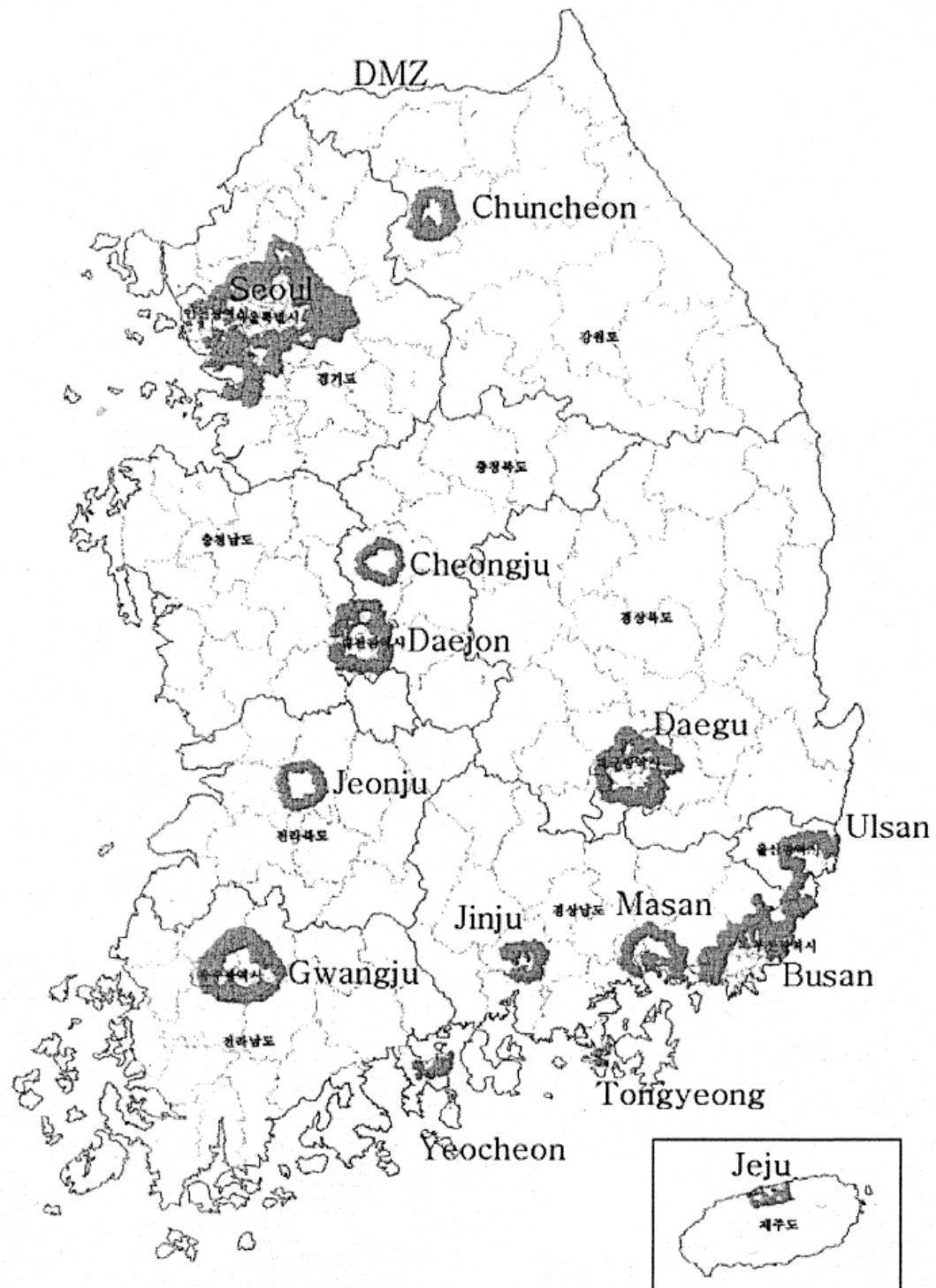


Figure 6.1 Map of restricted development zones in Korea

In 1998, the National Committee for the RDZ Reform was created and the proposals for reform of the Restricted Development Zone were submitted for legal action. The proposals were specified as follows:

- i. The RDZs will be maintained as a tool of growth management in the future but some small-and-medium sized cities where there is no development pressure or where population is stagnant will be exempted from the RDZs and the latter will be replaced by normal zoning regulations;
- ii. even if large cities continue to keep the RDZs, boundaries will be redefined as a result of environmental assessments and other local considerations;
- iii. windfall benefits will be recouped to prevent speculative land purchases and unearned income resulting from land price increases associated with urban land taken out of the RDZs;
- iv. the area under continuing RDZ control will be purchased at a fair price by the government at the request of land owners with development fees levied on any development within the RDZ; and
- v. contiguous villages above a certain size within the RDZ will be given special development permits to form integrated healthy communities.

Out of the 14 RDZs, seven RDZs around the small-and-medium sized cities have been abolished. The removal of the RDZs does not mean that there are no land use controls, but any development or land use changes will be regulated by normal zoning regulations, borrowed from US zoning concepts and practiced in Korea since 1934. As a matter of fact, the RDZ system of 1971 was superimposed upon the existing zoning system. The redrawing of the RDZ boundaries for the cities keeping the RDZs will take into account composite evaluation factors such as topography, land suitability, ecological and environmental vulnerability and local-specific conditions. The Korean government also commissioned to the UK's Town and Country Planning Association (TCPA) analyzes the RDZ policy reforms to assess the soundness of the Committee's proposals.

A Comparative View of British and Korean Greenbelt Policies

The TCPA's commentary consisting of two volumes was lengthy and cautious. In the first volume, the recommendations were made on the key issues of Greenbelt policy: the complete removal of the RDZs, the partial relaxation of the RDZ, management of land released from the RDZ, recapturing windfalls resulting from RDZ release, management of areas where the RDZ will be maintained, support to residents and property owners where the RDZ is maintained, and anti-speculative measures. The second volume covered the whole spectrum of the Korea planning system in the context of Greenbelt reform, beginning with the statement that Greenbelt policies can be effective and fair only if they form part of a more general set of land use policies, within the context of a hierarchical planning system that embraces regional, sub-regional and local plans. Without this framework, Greenbelts are almost bound to produce severe distortions and inequities. The TCPA also made a general evaluation of Korea's Greenbelt policy. The positive evaluation includes policy consistency, preservation of a large tract of urban green zones on the urban outskirts, the provision of extensive open space for the recreation and leisure of urban residents, and

contribution to land reserves for the benefit of future generations. On the other hand, Korea's Greenbelts have failed to check metropolitan growth. Land use control measures like Greenbelts are only to enable, guide and shape development forces and to correct their defects. The Greenbelts therefore could not, did not and should not have been expected to prevent urban growth. Some other negative evaluations were pointed out; increasing social costs spent on the construction of additional public facilities, the extension of commuting distance as a consequence of leap-frog development, useable lands within the Greenbelts left deserted while encouraging the devastation of potential reserved lands outside the Greenbelts, persistence of the initial poorly designated regions, and limitations on the natural growth of cities.

Although there is a superficial similarity of policy objectives between the UK's Greenbelts and Korea's RDZs, there are many key differences and inherent dangers in making cross-national comparisons. First, the development control of the UK does not incorporate a formal zoning system while the land use control system of Korea is based on the Euclidean zoning system of the US, characterized by the strict separation of uses and the punitive and rigid control of development. The British system of development control is somewhat more permissive, leaving a great deal of discretion to the local authorities and to the development control office. Second, this discretion is supported by the fact that the right to develop land has been nationalized. Provisions for compensation in the landmark 1947 Town and Country Planning Act allows local authorities to incorporate Greenbelts in their local plans by nationalizing development rights and compensating landowners once and for all for the designation of their land as Greenbelts. Claims for lost development rights have been paid in full many years ago, and everyone knows that there is no automatic expectation of development elsewhere. In particular, areas can be designated as Greenbelts where development is normally prohibited, and development permits can then be refused without any resulting liability to pay compensation for lost development rights. As there is no automatic right to develop outside the Greenbelts, land price differentials are minimized. But under the zoning system, development rights in the areas other than the Greenbelts may be commonplace, resulting in greater land price differentials and in greater disparities between Greenbelt residents and their non-Greenbelt neighbours.

A third significant difference is observed between the UK's and Korea's practice of Greenbelt policies. Greenbelt designations are expanding by a proactive response of Greenbelt residents and a vociferous campaign for countryside protection in the UK. Since 1979, the total area of approved Greenbelt has more than doubled covering about 12 per cent of England. On the contrary, Korea's RDZs have been strongly repudiated by incessant calls for their complete removal or for compensation, mainly from residents and landowners in the Greenbelts. This difference is not explained less by the economic fact of the price differentials between the Greenbelts and the non-Greenbelts but rather reflects the stage and characteristics of urbanization. The rapidity of urbanization and consequent housing shortage in urban areas made it impossible to contain the demand for urban land with the Greenbelt policy. A similar response was also observed after the 1955 Circular codified Greenbelt policy and extended the principle to areas in the UK other than London. Strong concerns were raised against the Greenbelts because of their implications for the

massive post-war house building program, forcing the development sites in the open countryside beyond the Greenbelts. Contemporary Koreans have a strong bias against living in the countryside, preferring to live in compact urban areas because of access to better schools and services rather than natural amenities. The UK Greenbelt policy may have derived some of its political support from the English preference for houses with gardens, and the symbolic value to the English identity of the historic rural landscape.

Changing Objectives from ‘Belt’ to ‘Green’

The main objective of the UK’s Greenbelt policy was an urban-oriented checking or stopper device as Minister Henry Brooks of Ministry of Housing and Local Government stated in 1961:

The very essence of a Greenbelt is that it is a stopper. It may not all be very beautiful and it may not all be very green, but without it the town would never stop, and that is the case for preserving the circles of land around the town (quoted by Elson, 1986, pp. 21–22).

However, Korea’s Greenbelt policy has not very successful in containing urban overspill around large cities, resulting in distortions of urban growth patterns and urban expansion beyond the Greenbelt. As stated in the early 1960s, a Greenbelt is about as useful as a leather belt in containing urban growth (Tankel, 1963). This may have been true in the UK, the original inventor of the Greenbelt concept. Although the latest statement of Greenbelt policy in Planning Policy Guidance Note 2 (PPG2), originally issued in 1988 and subsequently revised in 1995, reaffirmed that the key goal of Greenbelt policy was to prevent low-density urban sprawl and ‘ribbon development’ by keeping land permanently and undeveloped. The 1995 revision of PPG2 suggested that the use of Greenbelts has a positive role to play in fulfilling the following objectives (Steeley and Gibson, 1998):

- i. To provide opportunities for access to the open countryside for the urban population;
- ii. To provide opportunities for outdoor sport and outdoor recreation near urban areas;
- iii. To retain attractive landscapes, and enhance landscapes, near to where people live;
- iv. To improve damaged and derelict land around towns;
- v. To secure nature conservation interests; and
- vi. To retain land in agricultural, forestry and related uses.

Along with increasing global awareness of environmental problems and the limits of conventional zoning regulations for sustainable urban development, the need to redefine the objectives and uses of Greenbelt has been widely discussed since the late 1980s. During a debate at the Royal Town Planning Institute in 1993, several prominent UK planners were critical of the indiscriminate use of Greenbelt policy, arguing instead for a selective and strategic approach taking account of recent thinking on sustainable development (Steeley and Gibson, 1998). Greenbelt policies should also, by creating a more contained form of new development, assist in moving towards more sustainable patterns of urban growth. If

the Greenbelt concept is to be retained and applied intelligently, the existing approved Greenbelts may need to be completely reviewed and perhaps substantially revised to allow for more sensible and sustainable pattern of development (Delafons, 1994). More provocatively, the Regional Studies Association argued that Greenbelts have become an outmoded and largely irrelevant mechanism for handling the complexities of future changes in both urban areas and the countryside (Regional Studies Association, 1990).

Apart from the British Greenbelt system, existing approaches to land use planning and controls in the US and Korea, mainly built on zoning regulations, have also been challenged to embrace the complex needs, interrelationships, and interdependencies of human activities on land and environment. Euclidean zoning separates one type of land use from another in order to minimize negative externalities and other nuisances. Its weakness of inflexibility and inability to adjust to the forces of suburbanization and urban sprawl in the US became apparent after the 1960s. In response to the inflexibility of zoning, several corrective measures have been introduced under the name of growth management techniques: planned unit development, incentive zoning, mixed use development, agricultural buffers, smart growth ordinances, the transfer of development rights, etc. Finally, a new concept, New Urbanism, evolved out of the well known problems associated with conventional land use controls. It is a movement to reform patterns of urban growth based on the belief that current development patterns are contributing to the decline of central cities, the loss of open space and agricultural lands to low-density suburban growth, and the problems of crime, affordable housing and social equity (Silberstein and Maser, 2000). The concepts of new urbanism have been translated into practical forms of urban development. They include bounded high-density growth using urban growth boundaries, mixed-use development projects, the clustering retail and commercial jobs in planned nodes, transit-oriented development based on public transit rather than automobiles, and the revival of communitarianism and neighbourliness in the context of pedestrian-oriented neighbourhoods and user-friendly street and structure design principles.

A Convergent Path towards Sustainable Development

Irrespective of the UK's Greenbelts, the Korea's RDZs and the spread of urban growth management practices in the US, we are at the crossroads of redefining their objectives and practical applications. Entering into the new century, we are more attuned to the goals of sustainable urban development, adapting urban society to the changing environment and revised perceptions. Whether the UK government will have the courage to make wholesale changes in Greenbelt policy remains to be seen. But moves would need to be made cautiously, to ensure that the release of Greenbelt land would result in more sustainable outcomes than continuing development elsewhere. After a half century's indulgence with unbounded low-density growth, urban growth boundaries have been introduced in several State and local jurisdictions in the US. With the recent Greenbelt policy reforms and the follow-up recommendations from the TCPA, Korea is taking major steps to reform its

planning system including the RDZs, largely relying once again on imported solutions from the UK and the US.

The new National Land Use Planning Law of 2002 introduced the British development permission concept on top of the existing zoning system and an array of urban growth management techniques from the US, including adequate public facilities requirements, fiscal impact fees and phased development. In particular, the new Law is characterized by planning and development control based more on an urban-rural continuum rather than a dualistic system of urban and non-urban land use controls. Formerly, urban areas were regulated by the City Planning Law, while the non-urban areas remained without planned control. However, there were about 60 special laws to deal with non-urban areas, many of them inconsistent with each other. The new 2002 Law introduced a unitary planning system, integrating the City Planning Law and the many other laws dealing with non-urban areas, and local ordinances are currently being revised. Nevertheless, there are too many alien concepts that have never been tested in the Korean planning environment. There needs to be significant institutional capacity-building to implement the new planning system to avoid some of the mistakes made during the thirty-year experiment with the UK Greenbelt policy.

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PART II
FRANCE AND CONTINENTAL
WESTERN EUROPE

Chapter 7

Urban Sprawl in Rennes and 77 Urban Areas in France, 1982–1999

Remy Prud'homme and Bernard-Henri Nicot

Introduction

The purpose of this paper is to throw some light on urban sprawl in France. How can sprawl be defined and measured? Did it characterize the spatial development of French cities in recent decades? What forms did it take? Is it increasing or decreasing? What are the main determinants of sprawl in France? It might be useful to begin by providing some background information on urban development in France, on urban planning in France, and on the statistical information available. The paper then attempts to provide workable definitions of sprawl. It continues with a case study of sprawl in Rennes, which is used to flesh out the concepts used. It then asks whether the finding of this case study can be generalized to all French cities. The paper also tries to discover whether sprawl has a measurable impact upon the efficiency of cities.

Urban Growth in France

The profile of urban development in France has been rather atypical, relative to what has been observed in other developed countries, particularly Anglo-Saxon countries. Until the end of WW II, urban growth was very slow in France. The two sources of urban population growth were weak. First, total population growth was negligible. Birth rates were particularly low. Between 1901 and 1936, total population increased by 3 per cent – for the entire period, not per year. Also, rural-urban migration was relatively modest. France remained primarily an agricultural and rural country. As a result, French cities were growing at very moderate rates, much lower than the rates observed in the same period in the US, in the UK or in Germany.

The situation changed rapidly and dramatically in the post-war period. As shown in [Table 7.1](#), rates of urban growth in France in the 1950s and 1960s and also in the 1970s were significantly higher than in many other developed countries.

Table 7.1 Annual growth rates of urban population in France, other European countries and the USA, 1950–2000

France	Europe ^a	Europe ^b	USA
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1950s	1.96	0.77	1.64	1.77
1960s	2.33	1.28	1.64	1.27
1970s	0.89	0.54	0.68	1.05
1980s	0.40	0.34	0.24	0.87
1990s (est.)	0.41	0.24	0.20	0.77

Source: UNCHS (Habitat), *Global Report on Human Settlements* (1986) Appendix Table 1.

Notes: ^aUK and Scandinavian countries; ^bAustria, Belgium, Germany, Netherlands, Switzerland, and France.

In less than thirty years (1945–1975) France became an urban country. There were three different forces at work. One is that parts of some French cities were destroyed during the war. War damage was not as great in France as in other countries, such as Germany or Poland for instance, but it was nevertheless substantial. It is estimated that 20 per cent of the housing stock was destroyed (Choay 1983, p. 258). Cities like Dunkerque, Le Havre, or Amiens, for instance, had to be rebuilt to a large extent. Then, the total population of the country increased quite rapidly, because of relatively high birth rates (much higher than before the war), sustained immigration flows from Southern Europe and North Africa, and increased life expectancy. Finally, there was substantial internal rural-urban migration induced by the rapid decline in the share of agricultural output and employment. These three forces combined to account for a rapid growth of urban population, never seen before in France, and not seen after.

In the past twenty years, urban growth has declined markedly. Total population increased even more slowly. Rural to urban migration has largely come to an end, because most people now live in cities (the level of urbanization is over 78 per cent). There is even a growing number who work in cities and live in rural areas. The urban population is relatively stagnant. Of course, there are differences among cities, with some continuing to grow, while others decline. However, these differences are cushioned by many economic and social transfers, and are probably less marked in France than in most other developed countries. That French cities do not grow much in terms of population does not mean that they do not grow at all, and even less that they do not grow in terms of built-up area.

Urban Policies and Planning in France

A second important element is urban planning and policies. In the prewar period, largely because of very slow urban growth at both the local and national levels, there were no urban policies in France. Urban planning did not exist as an academic discipline. There were architects calling themselves ‘urbanists’, but they were making statements rather than implementing policies. After the war, on the other hand, the rapid urbanization of the

country required steering. This steering was provided by the powerful Ministry of Equipment and its ‘corps of road engineers’ (*ingenieurs des Ponts et chaussees*). It was therefore highly centralized, with local governments playing a minor role. It was also highly ‘technocratic, led by people with no training in planning, architecture, or social sciences. The dominant ideology was clearly anti-sprawl. All policy documents, such as the reports produced by the influential Urban or Housing Committees of the French Planning Commission, put the emphasis on the need to strengthen the centres.’ The Ministry of Equipment (the full title was ‘Equipment, Housing and Transportation’) and other central government bodies such as the *Caisse des Dépôts et Consignation* had many physical planning instruments in their hands. They had full control of infrastructure investments, major control of land and housing, notably because a significant share of newly built houses were subsidized low-income houses (both for rent and for sale) in the hands of public entities.

The situation began to change in the late 1970s and 1980s. The share of public housing declined sharply. The power of local governments increased significantly, particularly with respect to land use controls but also infrastructure investment. The rate of automobile ownership also expanded. The role of competition and markets was enlarged, and the French Planning Commission became unimportant. In consequence, the role of the Ministry of Equipment declined. Ironically, all this happened under mainly socialist governments. The anti-sprawl rhetoric has continued to dominate, but the instruments to control spatial development have been much weakened.

Data on French Cities

A third relevant element relates to the data available for the study of sprawl. France is divided into about 36,000 communes, patterned after 18th century parishes. The average size of a commune is therefore small: about 15km², or a circle of a 2km radius. The communes’ boundaries have hardly changed since the French Revolution. Many attempts have been made to encourage communes to merge, but they have all been unsuccessful. This means that demographic, and also economic and financial, data is collected and available at a detailed geographic level. The Censuses of 1982, 1990, and 1999 are particularly important as a data source because of standard and highly disaggregated spatial units and the ease of aggregating data for individual communes.

INSEE, the French statistical bureau, used to define ‘agglomerations’ in terms of physical continuity of the built-up area. This morphological definition was replaced in the 1990s by a functional definition. INSEE now defines ‘urban areas’ (*aires urbaines*) as follows. It considers all agglomerations with more than 5,000 jobs, of which there were 348 in 1999. For each of them, it adds all the adjacent communes in which at least 40 per cent of the workers commute to the agglomeration. It produces ‘urban areas’, which are basically labour markets areas. Urban areas have been defined in this way for both 1990 and 1999. The geographic extent of these urban areas obviously tends to expand over time; in this study we adopt constant 1999 borders.

We focus on the 77 urban areas of more than 100,000 inhabitants (in 1999), excluding Paris. Each includes a relatively large number – from 22 to 340 – communes. [Table 7.2](#) indicates the relative importance of our sample. It represents more than 24 million people in 1999, or more than one-third of the French population, and more than 7,000 communes.

Table 7.2 Population and employment of large urban areas in France, 1982, 1990, 1999 (million)

	1982	1990	1999
Population			
Paris urban area (1)	10.2	10.9	11.2
Large urban areas (77)	22.0	23.2	24.3
Other urban areas (276)	9.0	9.3	9.5
Non-urban areas	13.1	13.2	13.5
France	54.3	56.6	58.5
Employment			
Paris urban area (1)	4.7	5.1	5.1
Large urban areas (77)	8.6	9.0	9.5
Other urban areas (276)	3.6	3.7	3.9
Non-urban areas	4.5	4.2	4.3
France	21.4	22.1	22.8

Notes: ‘Urban Areas’ as defined in 1999; ‘large’ means: with a population of more than 100,000 inhabitants in 1999; data relates to metropolitan France, excluding overseas territories.

Defining Sprawl

To find out whether there has been sprawl in France, we first need a definition of the phenomenon. The concept is ambiguous because it is generally used to describe both a state and a process. We can say that there is sprawl in France in 1999, and that there has been sprawl over the 1982–1999 period. Here, we will primarily the analysis to the second meaning.

Over time, the population of a country and its cities increases. The same is true for jobs. Additional urban jobs and people must go somewhere. They either locate outside the borders of the city, and the city expands, or they locate within the borders of the city, and densities increase.

Can sprawl be defined as an extension of city borders? Such a definition raises the theoretical and practical problem of defining ‘borders’. A morphological definition can be used. In that case, the city is defined as the agglomerated built-up areas, with a contiguity rule (less than 200 meters in France). This morphological definition is unfortunately not very meaningful: people living 300 meters away from the rest of an agglomeration who work and shop in that agglomeration ‘belong’ to the agglomeration. This is why functional definitions are increasingly used. In that case, the city is defined on the basis of commuting or shopping patterns. This is the current approach of INSEE in their definition of ‘urban areas’ (*aires urbaines*) as described above. But it does not follow that an extension of urban areas, thus defined, qualifies as sprawl. Consider an urban area in which the population does not change at all during the period under study, in total and in each of its geographic zones, but in which people living at the fringes start commuting to the centre. By definition, the urban area has increased, although this increase, wholly because of an increase in mobility, cannot seriously be described as sprawl. Neither the morphological nor the functional definition of city borders is appropriate for a definition of sprawl.

It is more meaningful to consider what happens over time within a given urban area. The additional people and jobs will locate in different parts of the urban area, changing local densities. Sprawl might then be defined as an evening out of density differentials, or at least a flattening of density gradients. If densities increase at the same speed everywhere, then there is no sprawl. The more density differentials decrease, the more important is sprawl. Equipped with this definition, we can compare sprawl in different cities and over time.

In practice, we use the notion of *median distance* (Nicot, 1996). The median distance is the radius of the circle that comprises half the population of a given urban area constant over time. Two slightly different notions can be used.

One is the notion of *gross median distance*. The communes of the urban area are ranked by their distance to the centre of the central commune. One starts with the central commune, and adds the population of the nearest communes, until one reaches or exceeds 50 per cent of the total population of the area. In other words, if the median distance is 7km, half the people of the urban area live more than 7km from the centre. A median distance can also be calculated for jobs.

The other is the notion of *adjusted median distance*. To eliminate threshold problems, problems related to the geography of the city, and problems associated with defining exactly the centre of the central commune, we adopt the following procedure. As above, communes are ranked by distance from the geographic centre of the central commune. Their population is added until it is over 50 per cent of the urban area population. The average density of the ‘median area’ thus defined is calculated. We then calculate the radius of the circle that would have the density just and a population equal to 50 per cent of the population of urban area.¹

Changes in median distances are a measure of sprawl. If population or jobs increased at the same rate in all parts of the city, there would be no sprawl and median distances would remain constant.

The parent concept of relative centre/periphery densities can also be used. The centre is the area defined by a circle with a radius equal to the median distance, or more precisely by the communes the centre of which is within that circle. By our definition, it comprises about half the population of the urban area. Over the course of time, the population of the zones defined at the end of the period as centre and periphery (which are constant in terms of area) change. The change in the relative importance of the centre in terms of population or employment is an indicator of sprawl. If the share of the population of the centre remains constant, there is no sprawl, at least at this level of aggregation. The faster this share declines, the more important the sprawl. A closely related indicator is the change in the ratio of the density in the centre to the density in the periphery. A constant ratio implies a lack of sprawl. It is important to note that the ‘centre’ as defined here does not coincide with the central commune, the relative importance of which (in terms of area and of population) varies from urban area to urban area. Intercity comparisons made with our definition are therefore not biased by the vagaries of administrative boundaries.

A third approach to the measurement of sprawl is offered by changes in density gradients. If the slope of a density as a function of distance to the centre curve remains constant over the course of time, then there is no sprawl. The more it decreases, the more important sprawl is.

Urban Sprawl in Rennes

To flesh out these concepts, it is useful to begin with a case study, for which we selected the city of Rennes. Rennes is an urban area of slightly more than 500,000 inhabitants. It is the capital city of Brittany in the western part of France. It is an old city that has existed as a trade and administrative centre for centuries. Brittany used to be a low-income, mostly agricultural region. The region, and its capital, have developed rapidly in the past decades, because of tourism, industry (there is an important Citroen plant in the Rennes urban area), quality agriculture, services, and administration. The urban area is located on a relatively flat plain without topographical obstacles to growth. The central commune of Rennes (that gives its name to the urban area) has a tradition of good administration. Rennes has also set an example in intercommunal cooperation. The 20 most central communes have created a ‘district’, with a planning agency, and even some local tax cooperation. Over time, the number of co-operating communes has increased, reaching 33 in 1999. As in all French cities, there has been a special purpose district for public transportation funded by a wage tax. The population of the urban area increased from 423,000 inhabitants in 1982, 463,000 in 1990 and 521,000 in 1999. This is an average rate of 1.16 per cent per year in the first period, and 1.32 per cent in the second. Employment growth rates were 1.43 per cent and 1.38 per cent respectively. How was this growth distributed over space?

Figure 7.1 shows the densities of the urban area communes in 1982, 1990 and 1999, provides a first answer. It does not present a very clear answer. The series of maps shows

higher densities in the more central communes, although several communes in the west and southwest part of the city also exhibit relatively high densities. The maps also show a modest increase in densities over time.

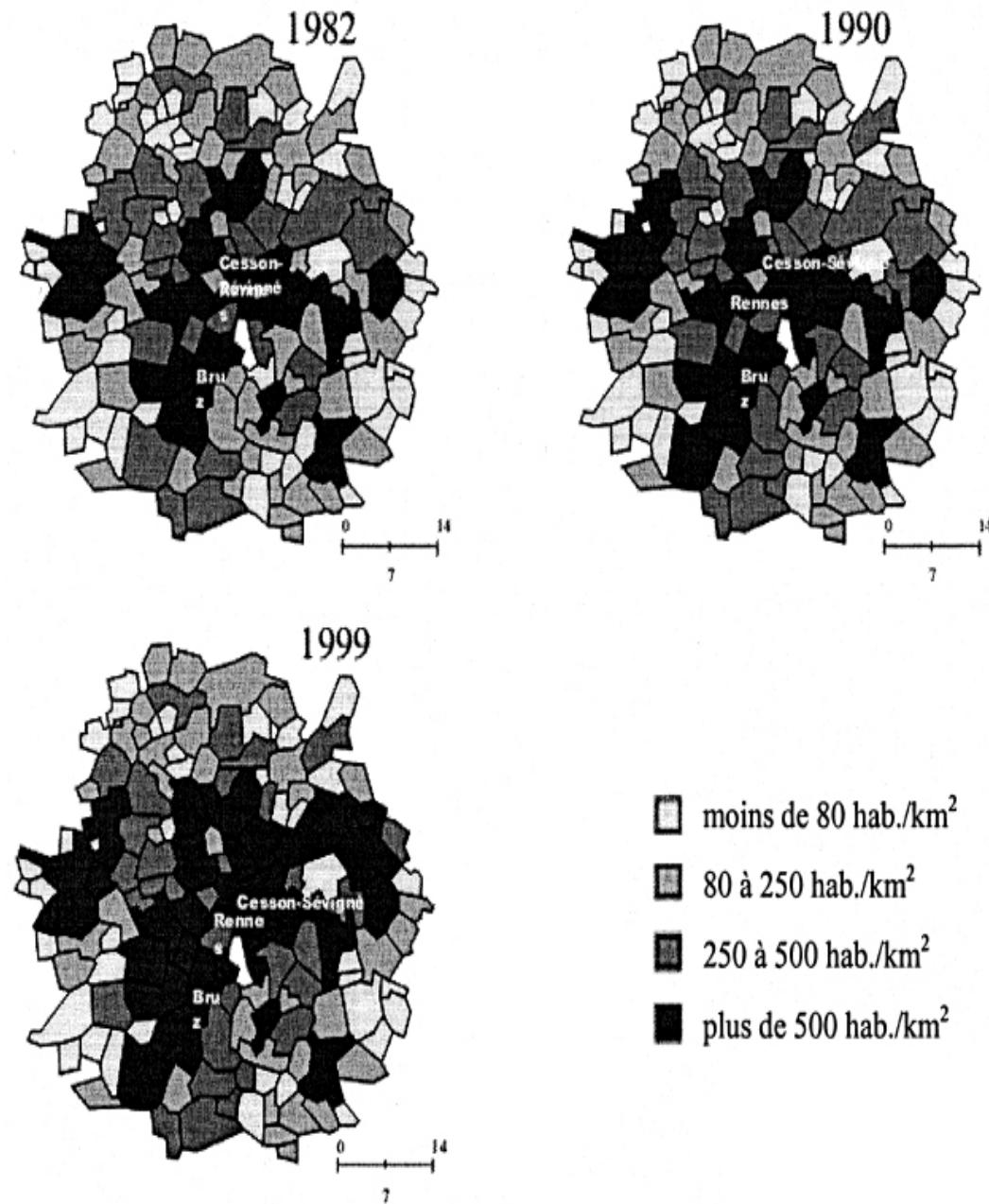


Figure 7.1 Map of densities in Rennes by communes, 1982, 1990 and 1999

Median distances have increased in Rennes (Table 7.3). Had the population of each commune increased by the same percentage, median distances would have remained constant. This is not what happened. There has been sprawl in Rennes. In less than two decades (1982–1999), the median distance for population increased significantly. As expected, the median distance for jobs was much smaller than for population, but it increased at a similarly high rate. However, in the 1980s the median distance for

population increased much faster than that for jobs, whereas in the 1990s the reverse happened. This suggests that, at least in the time frame considered, sprawl in Rennes was led by people rather than by jobs.

Table 7.3 Median distances and adjusted median distances for people and jobs, Rennes, 1982, 1990 and 1999 (km)

Year	Population		Jobs		
	Gross Distance	MedianAdjusted Distance	MedianGross Distance	MedianAdjusted Distance	Median Distance
1982	7.0	5.7	4.6	3.8	
1990	7.1	6.6	4.6	3.9	
1999	7.4	7.3	4.9	4.8	
Changes (in km)					
1982–0.1 1990		0.8	0.0	0.2	
1990–0.3 1999		0.8	0.4	0.9	
Changes (in %)					
1982–1.6 1990		14.4	0.0	4.5	
1989–4.0 1999		12.0	9.1	21.8	

Source: Authors' calculations

As mentioned, the 'centre' of an urban area consists of the communes the cumulative population (or employment) of which is one-half of the total population of the urban area. The centre for population differs from the centre for employment: the latter is smaller. Population and employment are expected to increase faster in the periphery than in the centre. But an interesting question is: did population and employment increase at all in the centre? If so, how much faster did population and employment in the periphery increase much faster than in the centre. [Table 7.4](#) offers some answers.

First, it appears that densities of both population and employment did not decline over the past two decades in the centre of Rennes. The sprawl that occurred did not result (at least in net terms) of people and jobs leaving the centre to relocate in the periphery. It resulted from growth differentials. Second, these differentials were not large. Because growth in the centre was modest (about 0.5 per cent per year for population), growth in the periphery appears several times greater, but the difference (about 1 per cent per year) is not large. As a result, the ratios of density in the centre to density in the periphery did not change much over time: from 26 in 1982 to 21 in 1999 for population. Third, this change in density ratios was somewhat more important for employment, from 41 per cent in 1982 to 31 per cent in 1999. This suggests that employment sprawl has been more important than population sprawl. Fourth, and contrary to expectations, sprawl in the second decade (1990–1999) was less important than in the first (1982–1990), explained by a revival of the centre in both indicators and a slowing down in peripheral employment growth.

Table 7.4 Densities for population and employment, centre and suburbs, Rennes, 1982, 1990 and 1999

	Population	Employment
Density in centre (units/km ²)		
1982	2,276	1,187
1990	2,338	1,232
1999	2,480	1,342
Density in periphery (units/km ²)		
1980	82	29
1990	102	36
1999	120	43
Annual growth rates (%) of densities		
Centre, 1982–1990	0.3	0.5
Centre, 1990–1992	0.7	1.0
Periphery, 1982–1990	1.9	2.8
Periphery, 1990–1999	1.9	1.9

Density in centre/density in periphery (ratios)

1982	25.9	40.9
1990	22.9	34.2
1999	20.7	31.2

Source: Authors' calculations.

Note: 'Centre' is defined as the central area that comprised slightly >50 per cent of the population in 1982.

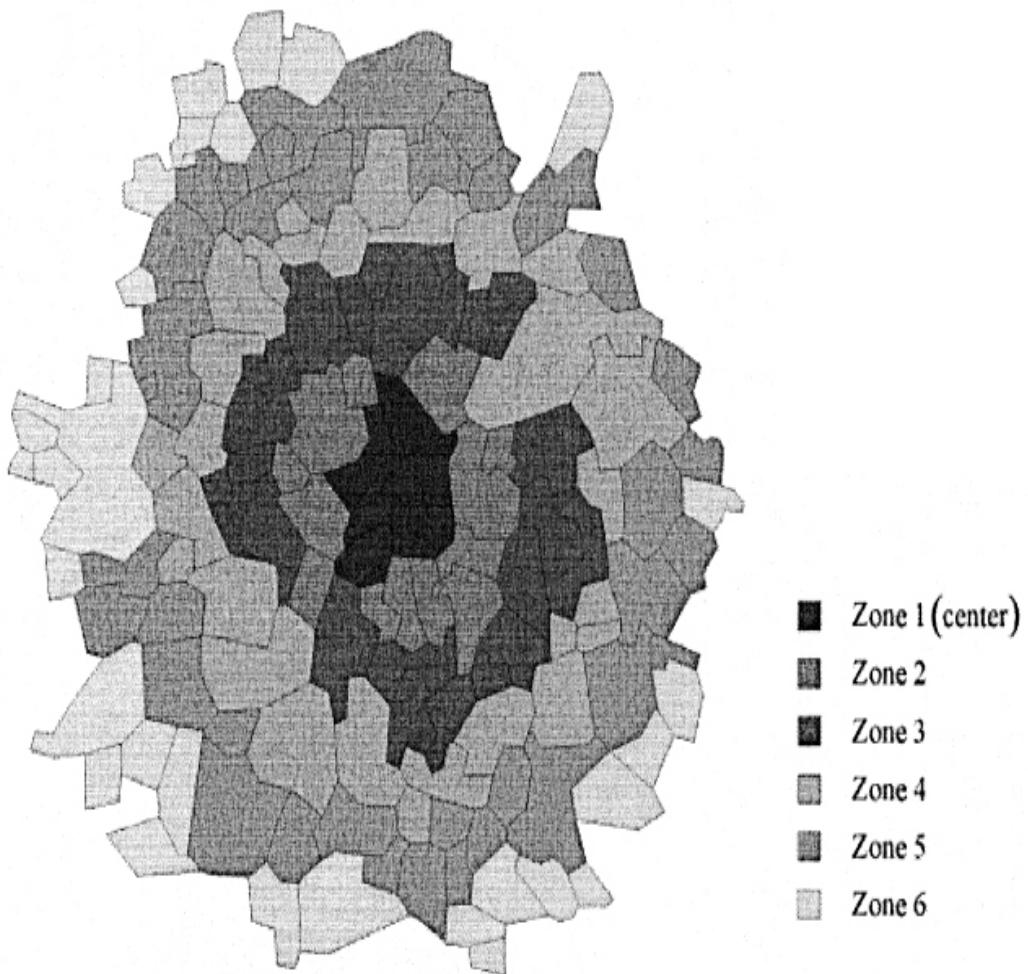
A less synthetic, more detailed, approach of the same issue is illustrated in [Table 7.5](#) that presents the evolution of population in Rennes by concentric zones. Zone 1 is the 1982 centre as defined above, Zone 2 is the adjacent 5km ring, Zone 3 is the next 5km ring, and so on. Because each zone keeps the same area (in km²) over time; the evolution of densities is similar to that of population.

[Table 7.5](#) shows that population increases very slowly in the centre, substantially faster in the first and second rings (zones 2 and 3), and more slowly in the subsequent rings. At the fringes of the urban area (about 30km from the geographic centre), population increases at the same rate as in the centre. More than half of the total increase in population between 1982 and 1999 took place in the first and second rings. It also appears that the zone of highest population growth moved from the first ring (zone 2) in the first period to the second ring (zone 3) in the second period, as if sprawl proceeded as a wave.

Table 7.5 Population in Rennes by zones, 1982, 1990 and 1999

Concentric Zones	1	2	3	4	5	6	Total
Distance from Centre (km)	<5.7	5.7–10.7	10.7–15.7	15.7–20.7	20.7–25.7	>25.7	
No. of Communes	5	12	26	28	29	30	140
Population ('000)							
1982	210	51	51	52	40	19	423
1990	215	66	59	60	44	20	463
1999	228	79	74	69	50	21	521
Annual Population Changes (%)							
1982–1990	0.3	3.2	1.9	1.9	1.1	0.4	1.2
1990–1999	0.7	2.1	2.5	1.5	1.5	0.8	1.3

Source: Authors' calculations



Note: See text for definition of zones

Figure 7.2 Map of concentric zones in Rennes

A third approach is provided by the relationships between population density and distance from the geographic centre. The population density (as well as the employment density) of a commune is obviously inversely related to the distance of the commune to the centre of the urban area, as shown in [Figure 7.2](#). Regression analysis were undertaken to explore this relationship. The results appear in [Table 7.6](#).

Table 7.6 Densities as a function of distance, Rennes, 1982, 1990 and 1999

Dependent variable (d)	Coefficient of distance (D) ^a	Intercept ^b	R ²	Form
Pop. Density				
1982	-1.52	3.78	0.75	Log-linear

1990	-1.64	4.00	0.78 Log-linear
1999	-1.73	4.15	0.78 Log-linear
Pop. Density			
1982	-0.419	2.70	0.70 Exponential
1990	-0.046	2.83	0.75 Exponential
1999	-0.049	2.94	0.77 Exponential
Job Density			
1982	-1.64	3.31	0.54 Log-linear
1990	-2.01	3.77	0.64 Log-linear
1999	-2.29	4.16	0.68 Log-linear
Job Density			
1982	-0.043	2.09	0.44 Exponential
1990	-0.054	2.30	0.55 Exponential
1999	-0.063	2.51	0.62 Exponential

Notes: For all regressions, the number of observations (communes) is 139 (one commune, with a very small area and consequently very high densities, has been excluded); Log-linear means: $d=B*D^a$, or $\ln d = \ln B + a*\ln D$; exponential means: $d=e^{a*D+b}$ or $\ln d = a*D + b$, with d =density and D =distance to the centre.

All these regressions tell the same story. Both log-linear and exponential functional forms can be used to relate commune densities to distance from the city centre, with an acceptable fit. A perfect fit cannot be expected, because the density of a particular commune can be influenced by specific geographic or historic features, such as the existence of a good road or of an old village. The intercept is an indicator of density at the geographic centre (at distance zero), and the coefficient of distance is the slope of adjustment curve, which is obviously negative. Four points stand out.

First, the fit (the R^2) improves over time. This suggests an evening out of the relationship: a harmonization of the density of all communes located at a given distance from the centre. Also, historic and geographic specificities tend to disappear with development.

Second, the fit is always better for population than for employment. There is more regularity in population patterns than in employment patterns. The existence of a major factory here or there could explain this difference.

Third, for both people and jobs, intercepts increase over time. In other words, densities in the centre also increase. As already noted, sprawl in Rennes does not imply an emptying out of the centre to benefit the periphery.

Finally, the negative slopes of the coefficients increase over time. This, by our definition, would suggest that there has been no sprawl in Rennes, perhaps even a ‘negative sprawl’. Such a finding contradicts the message of our less disaggregated measures of sprawl. What happens is that at the fringes of the city densities remain low. Because densities increase in the city centre, the slope of the coefficient declines, notwithstanding a greater increase in the densities of most intermediate communes. This puzzling finding reflects the imperfection of the regression fits and their functional forms. On the whole, however, sprawl has not been a major phenomenon in Rennes.

A final issue relates to income distribution. In the US, the poorer families tend to live in the centre and the richer families live on the periphery. For a long time, it has been claimed that the opposite was true in France. The rich, it was thought, prefer to live in lively downtowns, whereas the poor congregate in low quality suburbs. Does this pattern prevail in Rennes?

Table 7.7 Income in the centre and periphery, Rennes, 1984 and 1998

	Centre	Periphery	Total
Inhabitants per taxable household			
1984 (number)	4.3	5.1	4.5
1998 (number)	3.8	4.1	3.8
Change 1984–1998 (%)	-11.7	-20.7	-15.9
Income per taxable household			
1984 (1000 euros, 2000)	13.8	14.2	14.0
1998 (1000 euros, 2000)	13.4	15.0	14.2
Change 1984–1998 (%)	-2.6	5.4	1.6
Income per capita			
1984 (1000 euros, 2000)	3.3	2.9	3.1
1998 (1000 euros, 2000)	3.6	3.8	3.7

Change 1984–1998 (%)	10.0	32.2	20.5
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Source: Authors' calculations

The answer is provided in [Table 7.7](#). [Table 7.7](#) is based upon data on family income reported for tax purposes. For both legal and illegal reasons, these data are probably a poor proxy for actual income, and of how it changes over time. But there are no reasons to expect these data to be spatially biased, and it probably provides reliable information on the *relative* importance of income in centres and peripheries. The data on 'family' income is useful, but because the number of inhabitants per tax family varies over space and over time, it must be complemented by data on income per capita.

The patterns are clear. The size of families is smaller in the centre than in the periphery. Over the 1984–1998 period, it has declined both in the centre and in the periphery, but more in the periphery than in the centre. Family income was higher in the periphery than in the centre even in 1984, the same as in the US. Over the 1984–1998 period, family income increased faster in the periphery and declined in the centre, so the gap increased. In terms of income per head, the pattern is very little different. At the beginning of the period, income per capita was slightly higher in the centre. Over time, it has increased much faster in the periphery than in the centre. At the end of the period, income per capita was higher in the periphery. By now, therefore, average income, whether per family or per capita, is distinctly lower in the centre of Rennes than in its periphery.

We calculated average incomes per family and per capita in Rennes for each of the five zonal rings. The higher incomes of the periphery as a whole are largely determined by the much higher incomes in the first ring (between 5.7 and 10km from the centre). Incomes in the other rings are similar to or lower than incomes in the centre. Families and individuals located in the outer rings (more than 20km away from the geographic centre) are on average much poorer. In Rennes, if it is no longer true that the rich live in the centre, it remains true that the poor live in distant suburbs.

Table 7.8 Indicators of sprawl in Rennes and 77 French urban areas

	Average 77 cities	Standard Error	Rennes
Median distance for population (km)			
1982	4.8	1.9	5.7
1990	5.1	1.8	6.6
1999	5.2	1.9	7.3
Median distance for jobs (km)			
1982	3.7	1.5	3.8

1990	3.7	1.5	3.9
1999	3.9	1.6	4.8
Increase in median distance for population (km)			
1982–1990	0.29	0.33	0.83
1990–1999	0.15	0.22	0.79
1982–1999	0.43	0.42	1.61
Increase in median distance for jobs (km)			
1982–1990	0.05	0.31	0.17
1990–1999	0.17	0.27	0.86
1982–1999	0.22	0.43	1.00

Source: Authors' calculation

Generalizing the Case of Rennes

Is Rennes the exception or the rule? [Table 7.8](#) helps to answer this question. Although Rennes is somewhat larger than the average large city in our sample (520,000 inhabitants versus 316,000 inhabitants), it was in 1982 reasonably typical in terms of spatial structure. Its median distance for population was less than 20 per cent larger than the average, and its median distance for employment was almost the same. Densities in the centre and in the periphery in Rennes were also comparable to the average densities of French urban areas.

However, during the past two decades, Rennes has sprawled much more than the average large French urban area, both in terms of population and employment. In this sense, it is not typical. [Table 7.9](#) gives the list of the ten French urban areas for which median distances increased or decreased most and least over the 1982–1999 period both for population and jobs.

Table 7.9 Sprawl in France: Top and bottom ten urban areas, 1982–1999

Change in Median Distance in Population, 1982–1999 (in km)

	Greatest increases	Smallest increases
Rennes	1.61	Amiens
		0.04

Poitiers	1.35	Vannes	0.03
Toulouse	1.30	Douai-Lens	0.02
Nice	1.17	Bethune	-0.01
Tours	1.16	Lille	-0.01
Chalons-sur-Saone	1.05	Valenciennes	-0.01
Annecy	1.03	Maubeuge	-0.02
Bourg-en-Bresse	0.90	Forbach	-0.06
Saint Nazaire	0.89	Thionville	-0.08
Clermont-Ferrand	0.86	Metz	-0.95

Change in Median Distance in Employment, 1982–1999 (in km)

Geneve-Annemasse	1.5	Metz	0.0
Lyon	1.4	Caen	0.0
Bordeaux	1.2	Tarbes	0.0
Annecy	1.2	Roanne	0.0
Grenoble	1.1	Lille	0.0
Nice	1.1	Beauvais	-0.1
Rennes	1.0	Thionville	-0.1
Boulogne-sur-Mer	0.9	Bethune	-0.3
Nantes	0.8	Valenciennes	-1.0
Montbeliard	0.8	Maubeuge	-1.4

Source: Authors' calculations

Rennes indeed tops the list for population sprawl, and is number 7 (out of 77) for employment sprawl. Thus, the conclusions we drew about Rennes cannot be generalized. Overall, what is noteworthy is how limited sprawl (as measured in terms of median

distance) has been in France. Between 1982 and 1999 the average change in median distance has only been 430 meters for population and 220 meters for employment. As in the case of Rennes, population sprawl was more important in the first period than in the second, whereas the reverse is true for employment, again suggesting that the process of sprawl was led by people rather than by jobs was a national perhaps even an international, phenomenon.

The list of cities given in [Table 7.9](#) and represented in [Figure 7.3](#) suggests that ‘negative sprawl’ is not. The cities where population and employment sprawl was unimportant are in general problem cities, with relatively slow economic growth and high unemployment rates.

Overall, sprawl has been moderate in France over the past two decades. A similar conclusion is drawn from the examination of the evolution over time of the ratio of the population and employment shares of the centre to the total population of the urban area (defining the centre in constant 1982 terms). In the absence of sprawl, this ratio would remain constant; in the presence of substantial sprawl, the ratio would decline significantly. [Table 7.10](#) provides the numbers.

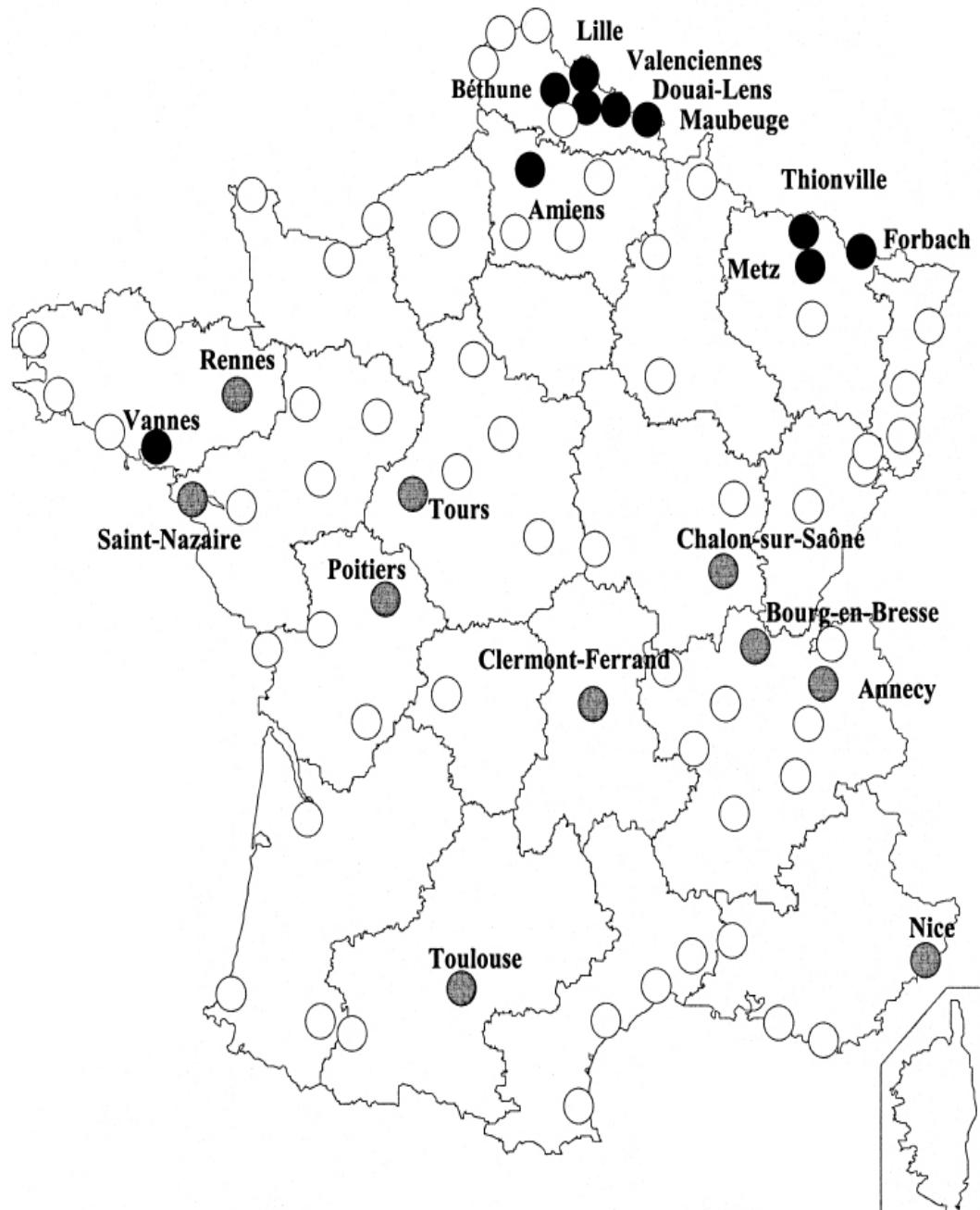
Table 7.10 Population and employment in centre divided by total population, 77 French urban areas, 1982, 1990 and 1999

	Average	Standard-error
Population in centre/total population (%)		
1982	54	0.05
1990	51	0.04
1999	50	0.05
Change (%)		
1982–1999	-7.1	0.05
1982–1990	-4.9	0.03
1990–999	-2.4	0.02
Jobs in centre/total jobs (%)		
1982	62	0.09
1990	61	0.09
1999	59	0.08

Change (%)

1982–1999	-4.0	0.06
1982–1990	-1.2	0.04
1990–1999	-2.8	0.04

Note: The ‘centre’ is a constant area, defined as the centre in 1982; however, the centre for population is not the same as that for employment.



- Black dots indicate the bottom ten sprawl cities in France
- Gray dots indicate the top ten sprawl cities in France

Figure 7.3 Population sprawl in France: Top and bottom ten urban areas, 1982–1999

In most large French urban areas, the share of the population living in a centre has not changed much. It has, on average, declined from 54 per cent in 1982 to 50 per cent in 1999. This implies that densities have increased at a similar pace at different locations in urban

areas. Most of this modest change took place in the first period (1982–1990). A similar pattern is observed for employment. The share of jobs located in the centre declined only slowly, by about 4 per cent overall, with the better performance occurring in the second period.

Did the spatial distribution patterns observed for Rennes prevail in other large French cities? By and large, yes. We found that the rich-centre poor periphery no longer applied in Rennes. [Table 7.11](#) suggests the same is true of France's other large urban areas, with the exception of Paris and Lyon.

Table 7.11 Incomes in centres and peripheries, 77 urban areas, 1984 and 1998¹

	Centres	Periphery	Total
Persons per taxable household			
1984 (number)	4.3	5.1	4.5
1998 (number)	3.8	4.1	3.8
1984–1998 (%)	-11.7	-20.7	-15.9
Income per tax family			
1984 (1000 euros 2000)	13.8	14.2	14.0
1998 (1000 euros 2000)	13.4	15.0	14.2
1984–1998 (%)	-2.6	+5.4	+1.6
Income per capita			
1984 (1000 euros 2000)	3.2	2.9	3.1
1998 (1000 euros 2000)	3.6	3.8	3.7
1984–1998 (%)	+10.0	+32.2	+20.5

Note: The numbers are the non-weighted averages for the 77 large urban areas.

The household income data show that, on average, for our 77 large urban areas, income was lower in the centres, in both 1984 and 1998; they also show that the difference between centres and the periphery increased significantly over time. In 1998, household income in the periphery is on average about 12 per cent higher than in centres.

These numbers must be qualified by taking into consideration household size which varies between the centres and the periphery and between 1984 and 1998. The very low increase in household income over the period (1.6 per cent for the entire 14 years period)

reflects not so much economic stagnation as a significant decline in household size.² As for income per capita in centres and the periphery, the picture is somewhat different. In 1984, incomes per capita were, on average higher in the former. By 1998, the reverse was true. In recent decades, French cities (with a few exceptions) have tended to resemble American cities. However if Rennes is a guide to other cities, it may be that the rich live in the close-in suburbs while the poor continue to live much further away.

Explaining Sprawl in France

What determines sprawl in France? As elsewhere, it is the preference of both households and firms for lower densities. One can hypothesize that this preference facilitated by automobile ownership. The size of an urban area should also contribute to sprawl, at least as measured by the median distance. One could also expect sprawl to be negatively related to initial densities. The relationship between income and sprawl is more difficult to predict. On the one hand, higher income households are more able to move out of city centres; on the other hand, it can be argued that they may value more urban amenities that are more prevalent in centres than on the periphery. Families with children should prefer peripheral locations. There could also be some interdependence between population sprawl and employment sprawl. All these hypotheses were tested for 1999 data ([Table 7.12](#)). Cross-sectional data is used to give insights into the process over time; statics are used as a substitute for dynamics.

These regressions suggest several points. One is that automobile ownership explains population sprawl to some degree. Curiously, it also explains employment sprawl but negatively; the higher the level of automobile ownership, the lower the median distance for jobs. Population sprawl is significantly explained by jobs sprawl, and *vice versa*. Income contributes to population sprawl, but negatively; the higher the level of urban income, the shorter the median distance for population. The impact of income on job sprawl is positive, but not very significant. Contrary to expectations, the relative importance of children in an urban area has no impact upon population sprawl. Similarly, and surprisingly, population and job growth have no impact upon either population or job sprawl.

To be more in line with our dynamic definition of sprawl we also ran regressions to try to explain changes between 1990 and 1999 in the median distance for both population and employment using the following variables: initial (1990), changes in population and in employment, 1990–1999; automobile ownership; and income. They were so insignificant (with no t-value higher than 0.5, and no R^2 higher than 0.1) that they are not even reported here.

The Impact of Sprawl upon the Efficiency of Cities in France

There are reasons to believe that sprawl affects negatively the efficiency of cities. An earlier paper (Prud'homme and Lee, 1999) hypothesized that the efficiency of a city is a

function of the effective size of its labour market. The effective size of a labour market is the number of jobs that can be accessed in less than n minutes (with n=30, for instance). Calculating the effective size of a labour market is data intensive. The city is divided in a large number of zones. For each zone, we consider all the zones that can be accessed in <n minutes, and then calculate the number of qualifying jobs in the zone. The same calculation is done for each zone. A weighted average (weighted by the number of workers) is calculated for the urban area as a whole. This is the effective size of the labour market from the worker perspective. A similar calculation can be done from the firm perspective.

Table 7.12 Determinants of median distance for population and employment, 77 French cities, 19992

(1)
Population

Dependent Variable	Pop.	Pop. 1990-99	Autos	Income	Children	Median Distance	Intercept	R ²
Med. Pop	Dist 0.35 (6.1)						4.12 (16.3)	0.33
Med. Pop	Dist		-.21 (-0.50)				6.66 (2.31)	0.06
Med. Pop	Dist			5.76 (2.56)			-0.037 (-0.03)	0.001
Med. Pop	Dist 0.094 (1.21)	0.055 (0.07)	5.6 (3.0)	-0.24 (-2.2)	0.17 (0.02)	0.94 (10.5)	-2.0 (-0.79)	0.78

(2)
Employment

Dependent variable	Pop.	Pop. 1990-99	Autos	Income	Children	Median Distance	Intercept	R ²
Med. Jobs	Dist 0.76 (6.08)						2.94 (13.7)	0.33
Med. Jobs	Dist 0.14 (1.3)	-1.44 (-0.78)	-3.21 (-2.21)	0.079 (0.76)		0.70 (11.6)	2.8 (2.11)	0.79

Notes: Numbers in italics are t-values (t-values are in parentheses); ‘Autos’ is vehicles per households; ‘Children’ is the ratio of children of less than 15 years to total population; Income is the average income per household as assessed for tax purposes.

The efficiency of a city is the labour productivity (output per worker) adjusted for the industry mix of the city. Why would it be related to the effective size of the labour market? The larger the effective labour market, the easier it is for firms to find the precise labour skills they need, and for workers to find the jobs they want for which they are qualified. It could also be argued that the effective labour market size is a good proxy for the effective size of the market for goods and services. We calculated efficiency and the effective labour market size for 22 French cities, and ran regressions that indicated a strong relationship. The elasticity of efficiency to labour market size is about 0.2; when the effective labour market size increases by 10 per cent, output per worker increases by 2 per cent.

The effective size of a labour market is, in turn, a function of three variables: the size of the city, the degree of mobility (as reflected in travel speeds), and the relative locations of jobs and homes. The relationship is nearly axiomatic. If jobs are on average close to homes, if people travel fast, and if there are many jobs/homes, then the labour market size will be very large. The relative location of jobs and homes is a possible measure of sprawl. Let W_i be the number of workers in zone i , W the total number of workers ($W = \sum_i W_i$), J_i the number of jobs in zone i , J the total number of jobs in the city ($J = \sum_i J_i$), and D_{ij} the Cartesian distance from i to j . For a given zone i , one calculates the average distance of workers to all jobs DW_i :

$$DW_i = \frac{\sum_j D_{ij} * J_j}{J}$$

For the city as a whole, the average distance of jobs for workers, DW , our indicator of sprawl, is the weighted average of all DW_i , weighted by the number of workers in each zone i :

$$DW = \frac{\sum_i DW_i * W_i}{W} = \frac{\sum_i D_{ij} * W_i}{\sum_i W_i}$$

In the sample of French cities for which this indicator was calculated, the average potential job-home distance is 6.4km. It is of course larger than the average effective job-home distance, which is 3.3km, because workers are not assigned to jobs randomly.

Regressions were run with the effective size of the labour market as the dependent variable, and size, speed and sprawl as explanatory variables. All explanatory variables, including our indicator of sprawl, are highly significant, and have the expected signs. The elasticity of effective labour market size to sprawl is about -1.15. When sprawl, defined as the average potential jobs-homes distance, increases by 10 per cent, the effective size of the labour market decreases by 11.5 per cent, and the efficiency of the city declines by about 2.3 per cent. [Figure 7.4](#), in which e means elasticity, summarizes these findings.

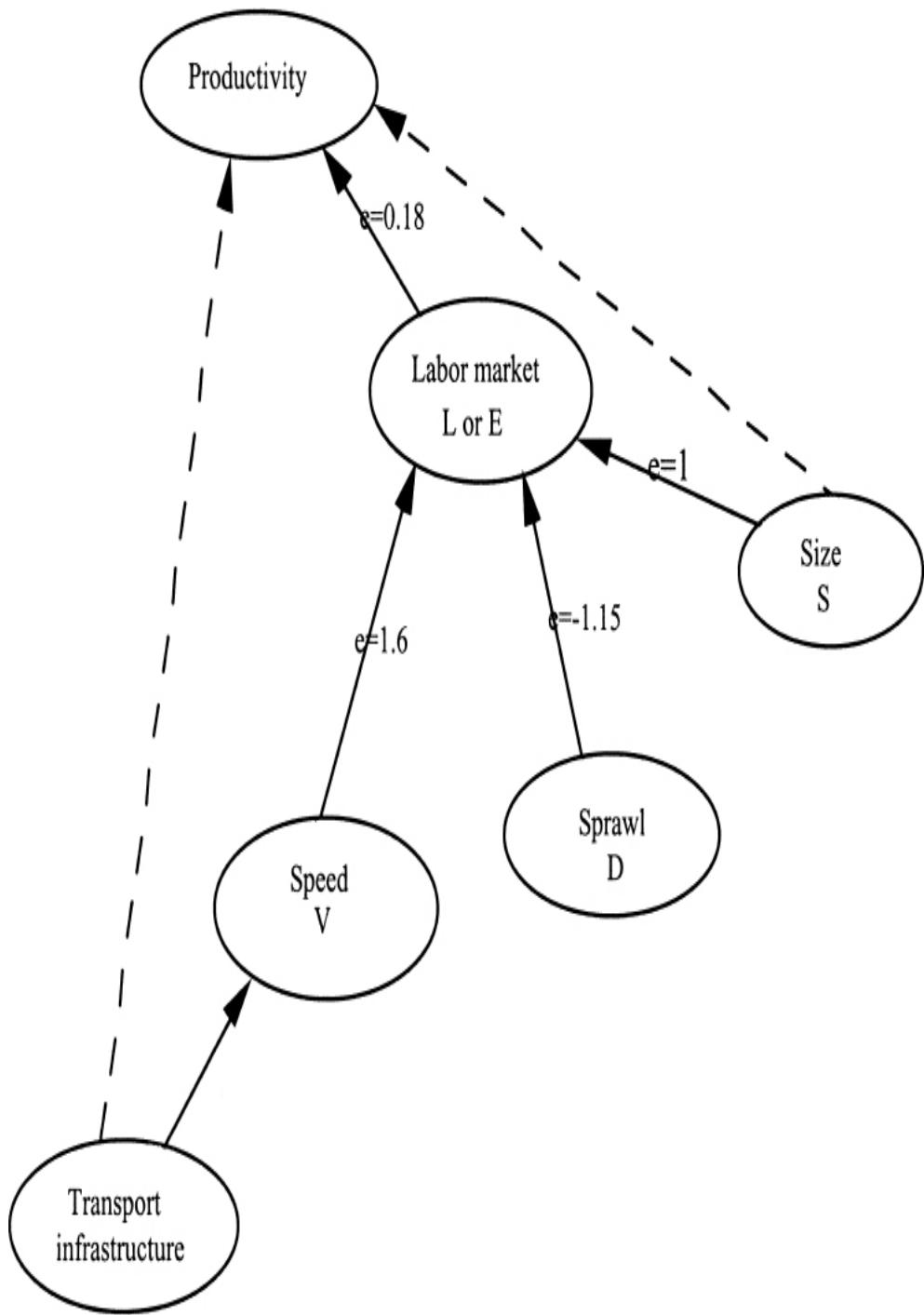


Figure 7.4 The efficiency of cities

Of course, speed and sprawl are not wholly independent, but are reciprocally linked. When workers can move more easily, they may locate further away from their jobs, and when an urban area is spread out, people move around faster, largely because of more reliance on the automobile, in particular because the share of the fast mode (the automobile) increases. A reduction in sprawl, therefore, does not automatically lead to an increase in efficiency.

Conclusion

The main conclusion that emerges from this study is that urban sprawl has been moderate in France in the past two decades. To arrive at this conclusion, we developed an indicator of sprawl, the *median distance*, measured as the radius of a circle that results in one-half the population in an urban area living within this circle (and consequently with one-half outside). A similar indicator is constructed to examine job sprawl. We calculated these indicators for 1982, 1990, and 1999 for the 77 largest French urban areas, and examined their behaviour over the past two decades. Much to our surprise, they have, on average, increased rather slowly, by only about 400 meters (or 7 per cent) for population and 200 meters (or 2 per cent) for jobs over a 17 years period. The case of Rennes was used to illustrate the methodology, but in terms of the results it is not fully representative.

In general, densities in the different parts of a French urban area have increased at similar rates. The main changes are not in the spatial structure of residential location, nor even in the spatial structure of employment location, because these remain basically the same. Urban areas in France do not expand because more people or firms settle in peripheral areas, but because people living in rural or quasi-rural communes (located 40 to 50km from the centre) commute in larger numbers to the urban area. This, by definition, makes these communes part of the urban area.

¹ Let P be the population of the urban area; P_m the population of the ‘median area’ (with $P_m > P/2$); S_m the surface of this area; d_m the density of this area ($d_m = P_m/S_m$); and D_a the adjusted median distance. We have:

$$D_a = \text{Root of } (P/2\pi d_m)$$

² Consider a city consisting of people earning 100 each. Suppose they are all married. The average family income will be 200. Let us now suppose that they all divorce. The average family income will now be 100.

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Chapter 8

Urban Sprawl in France 1990–1999

Alain Sallez and Julien Burgi

Introduction

Urban sprawl in France is a recent phenomenon, compared to the United States or the United Kingdom. The trend started after World War I and accelerated after World War II as industries moved away from dense urban areas to settle in the close-in suburbs. In the 1970s, the process entered a second stage, with a boom in the relocation of both economic activities and housing to more distant places. Since then, the pace of growth in French inner cities slowed down, then declined absolutely, while population and employment rose in the first suburban ring and even more on the periphery.

This evolution has recently led INSEE, the National Institute for Statistics, to design a new concept of ‘Urban Areas’ in order to assess more accurately the new scale of urban growth. This new tool has allowed a further analysis, both quantitative and qualitative, enabling us to draw some prospective conclusions. In this analysis, we do not want to separate out population from employment because urban dynamism is closely linked to the rate of economic growth.

Definitions and Figures

The Need for New Definitions

In order to assess demographic trends, INSEE originally used to draw statistics from periodical Censuses at the town level. They also reported data for inner cities, agglomerated suburbs, peri-urban areas and rural spaces.

This approach by type of urban area showed the sprawl from inner-cities to peripheral areas, still qualified as rural, as illustrated in [Table 8.1](#) and [Figure 8.1](#).

The need to improve the definition of urban areas led INSEE to introduce new classifications in order to assess urban growth. Since 1997 the so-called ‘Urban Area Zoning’ has divided French cities into two components:

- an ‘Urban Pole’, made up of the inner city and its contiguous suburbs
- its ‘Peri-Urban Ring’ (i.e. all the peripheral towns linked to the Urban Pole via a high commuting rate).

Table 8.1 Annual average population growth rates in towns and rural areas in France

	'62-'68	'68-'75	'75-'82	'82-'90	'90-'99
Inner cities	1.29	0.58	-0.06	0.12	0.12
Suburbs	2.66	2.09	0.93	0.86	0.42
Peri-urban rural spaces	-0.27	0.12	1.19	0.95	1.03
Other rural spaces	-1.35	-1.64	-1.05	-0.52	0.20
France	1.15	0.81	0.46	0.51	0.37

Source: INSEE (2000)

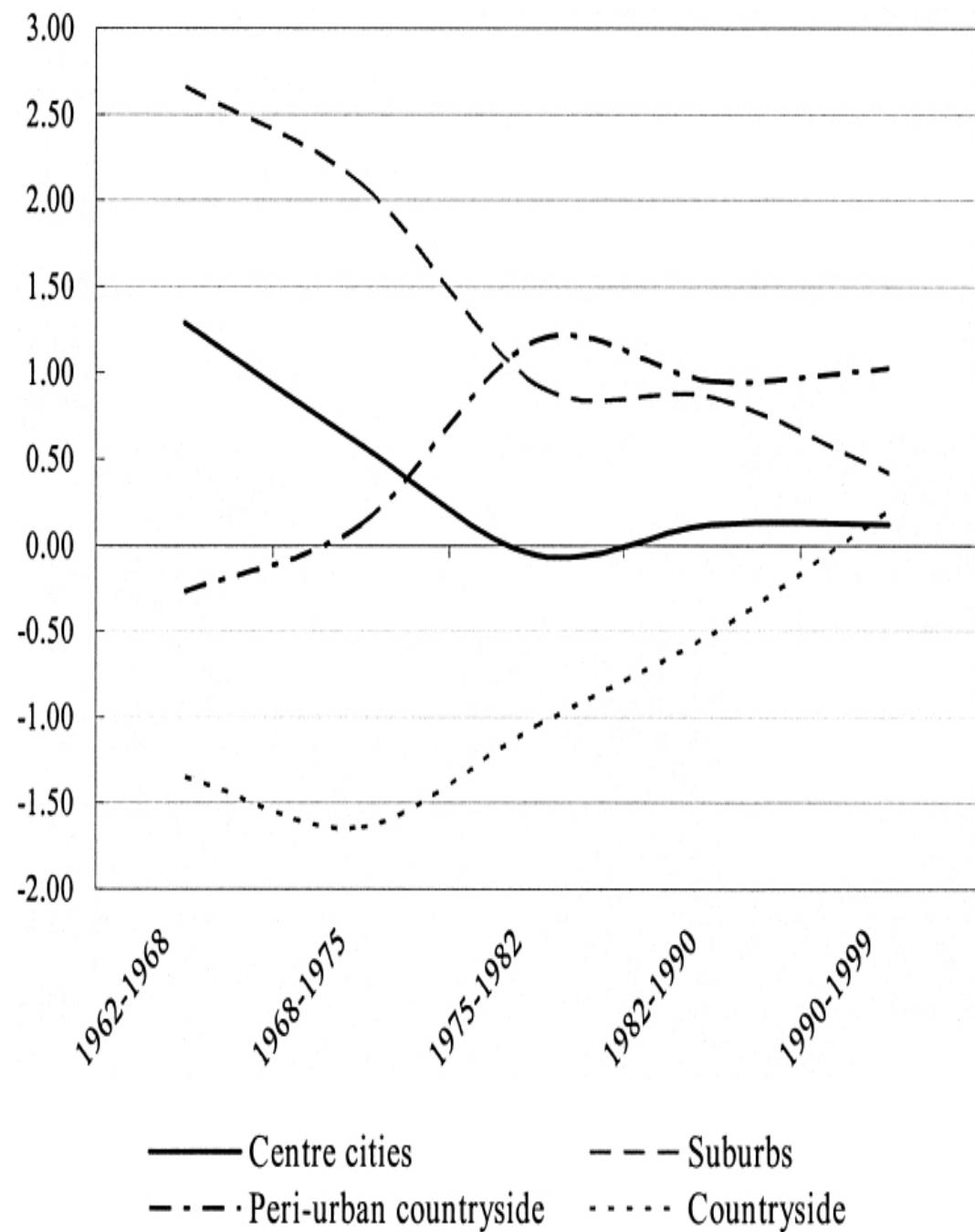


Figure 8.1 Population growth by area in France
Table 8.2 Definitions of urban area zoning in France

Denomination	Definition	Location
Urban Area	Urban pole	Central urban unit ¹ exceeding 5,000 jobs

Peri-urban ring Surrounding urban units with over 40% commutes to the urban pole or other urban units of the peri-urban ring

Multi-polarized towns Other urban units whose overall commuting rate to several Urban Areas exceeds 40%

Small peripheral towns

Rural spaces

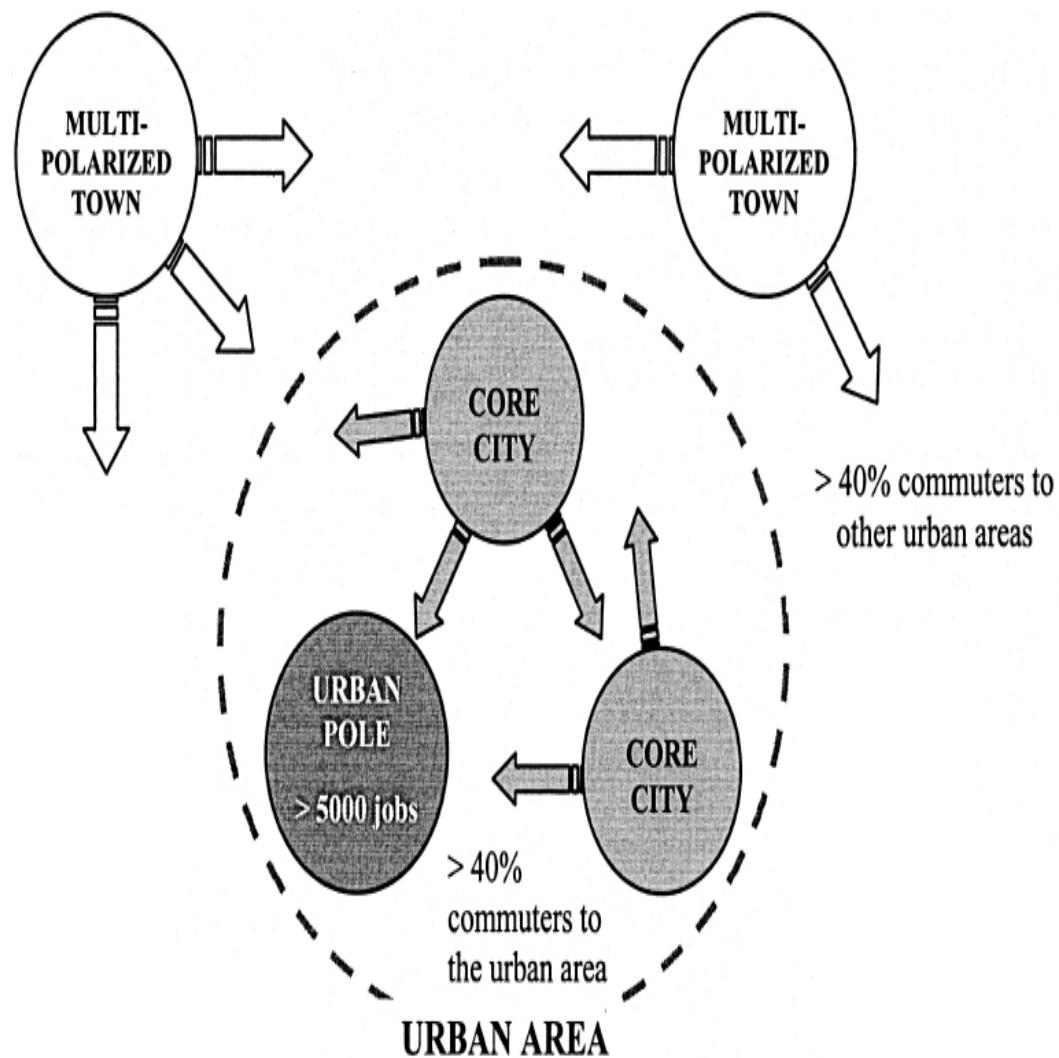


Figure 8.2 Scheme of the urban area zoning in France

Assessing Urban Sprawl

The new set of definitions, which provides a more accurate description of the territorial mutations associated with urban sprawl, gives us a relevant way of assessing urban evolution over the past decade.

Spatial extension Between 1990 and 1999, the total space covered by the 100 largest urban areas has risen by 35 per cent. Although most of that growth took place in the largest cities, the trend is almost ubiquitous because only two minor urban areas exhibited no spread.

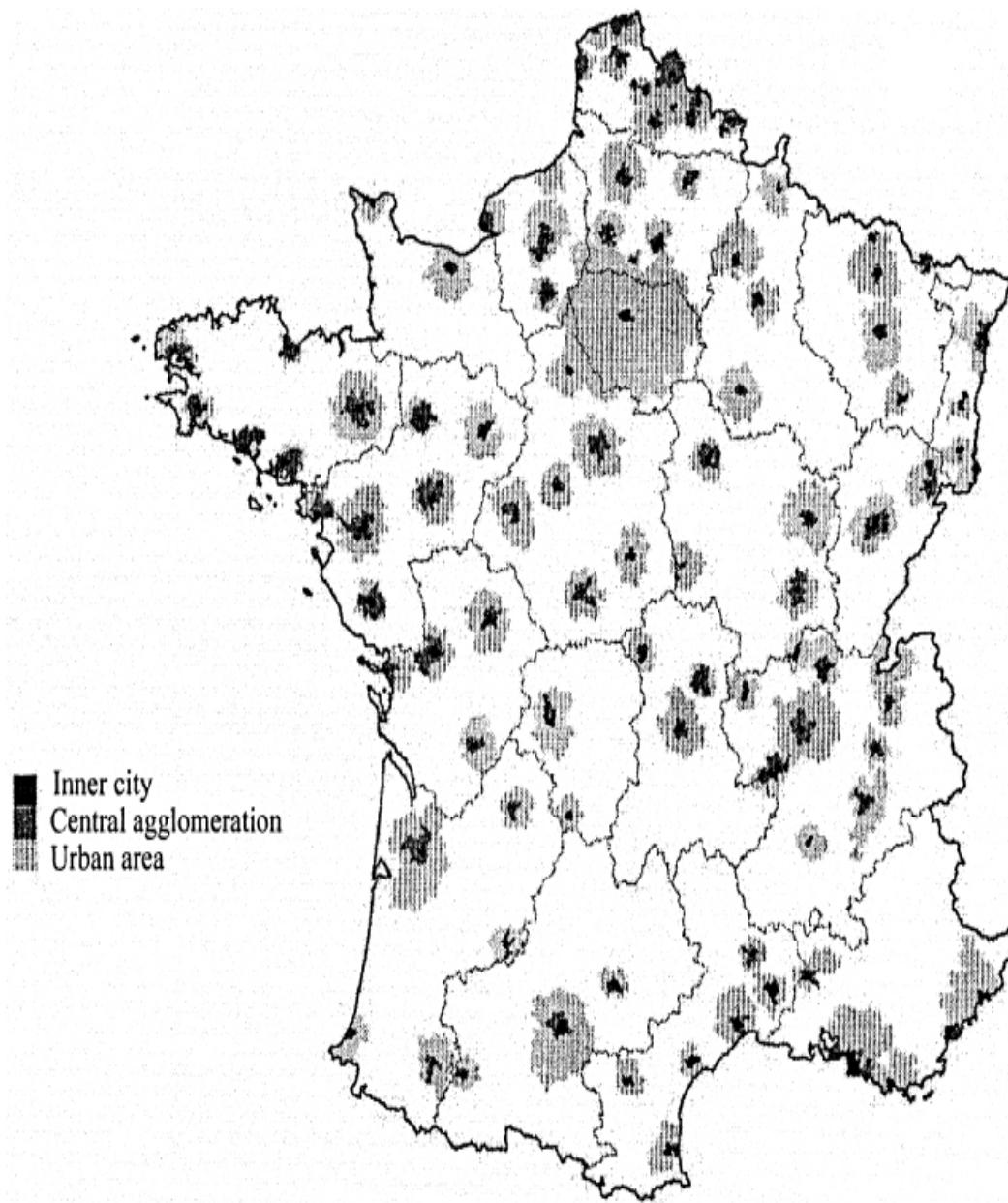


Figure 8.3 Urban area expansion in France, 1990–1999

Keeping in mind that urban areas are defined primarily in terms of commuting, the spatial extensions illustrated in [Table 8.3](#) imply longer commuting distances with

increasing urban size.

Table 8.3 Maximum distance to the centre of the urban pole for the 100 largest urban areas in France

Urban Areas by size (in population)	Average surface (in sq km)	Average distance to city centre (in km)
Under 100,000	389,826	14.3
100,000–200,000	891,333	18.3
200,000–500,000	714,826	23.0
500,000–1,000,000	552,838	28.8
Over 1,000,000	609,934	59.8
Overall	3,158,759	29.4

Source: FNAU, *Atlas des Aires Urbaines* (2001)

Population and density Between 1990 and 1999, the total urban population rose by 4.7 million, while rural areas suffered a loss of 2.8 million. Most growth has been absorbed by urban areas and multi-polarized towns at the expense of metropolitan rural growth ([Table 8.4](#)).

Table 8.4 Population growth of urban areas and multi-polarized towns in France

	Population (million) 1990	1999	Annual growth rate
			1990–1999
Urban areas	41.3	45.1	1.00%
Multi-polarized towns	2.0	2.9	4.20%
Metropolitan rural areas	13.4	10.6	-2.60%
Metropolitan France	56.6	58.5	0.40%

Source: INSEE, *INSEE Première n°765*, (2001)

In more detail, there are sizable discrepancies inside urban areas between the inner city, its agglomerated suburbs and the outside periphery (i.e. the peri-urban ring); see [Table 8.5](#).

Table 8.5 Population distribution in urban areas in France

Pop (1990)	Pop (1999)	Annual growth rate
------------	------------	--------------------

Inner City	31.90%	31.00%	0.12%
Agglomerated suburbs	43.60%	43.50%	0.42%
Peri-urban ring	24.20%	25.50%	1.03%

Source: FNAU, *Atlas des Aires Urbaines* (2001) and INSEE, *NSEE Premiere n°701*, (2000)

Economic activity Up to now, the spread out of economic activities to the periphery has been weaker than the extension of population. The early move of industries from inner cities to the surrounding suburbs has not been influenced much by the residential development of the peri-urban Ring. The spatial extension of urban areas shown itself primarily in terms of longer commuting distances.

Over the past decade, however, the continuous decline in employment in inner cities has been associated with faster economic growth rates in the periphery, thus suggesting a recent turning point in corporate locational strategies.

Table 8.6 Employment distribution by place of work in urban areas in France

	Jobs (1990)	Jobs (1999)
Inner City	52.90%	51.00%
Agglomerated suburbs	36.30%	37.80%
Peri-urban ring	10.80%	11.20%

Source: INSEE, *INSEE Première n°767*, (2001)

Obviously, the data hide significant sectoral differences. Analysis by sector of activity shows that many of jobs in the inner cities and the suburbs are labour-intensive activities, particularly services and small industries. On the other hand, the peri-urban ring attracts higher value-added activities, especially R&D, state of the art logistics and new corporate headquarters.

Morphology of Urban Sprawl

As noted, urban sprawl in France was still a strong phenomenon in the 1990s. However, the way urban areas have expanded into rural spaces appears to be different from the radial-concentric spread out that prevailed until the 1970s. The level of attraction of peri-urban areas now seems to be more complex than geographic proximity to the central urban pole.

The New Forms of Urban Sprawl

Spatial extension via polarization Activities and households that leave inner cities do not settle in the closest available spaces anymore. The original compromise between cheap land and low transport costs used to determine the radial-concentric relocation of economic and residential agents is somewhat outdated.

In line with the arguments of Fujita and Ogawa (1989), the largest agglomerations in France have experienced the evolution of secondary centres in their peripheries. Firms and city residents tend to search for a specific environment leading them to concentrate in a few locations offering the required range of externalities in the peri-urban area. Such locations sometimes may be located far away from the centre generating spatial gaps within the urban area.

These emerging peripheral attraction poles now account for most relocations from the central urban pole, but they also enforce a strong influence in their vicinity. Thus, the postwar radial spread has given way to re-polarization in the peri-urban ring.

Scattered urbanization on the urban fringe The polarization of peri-urban spaces reflects the fact that a growing number of ex-city dwellers put up with long commutes to live in the countryside. Meanwhile, the initially rural populations of these areas tend to adopt urban activities and a way of life called ‘rurbanisation’ (Bauer and Roux, 1976). This double phenomenon of extension of urban areas and conversion of the surrounding rural spaces contrasts with the pure agglomeration process that prevailed until the 1970s ([Figure 8.4](#)).

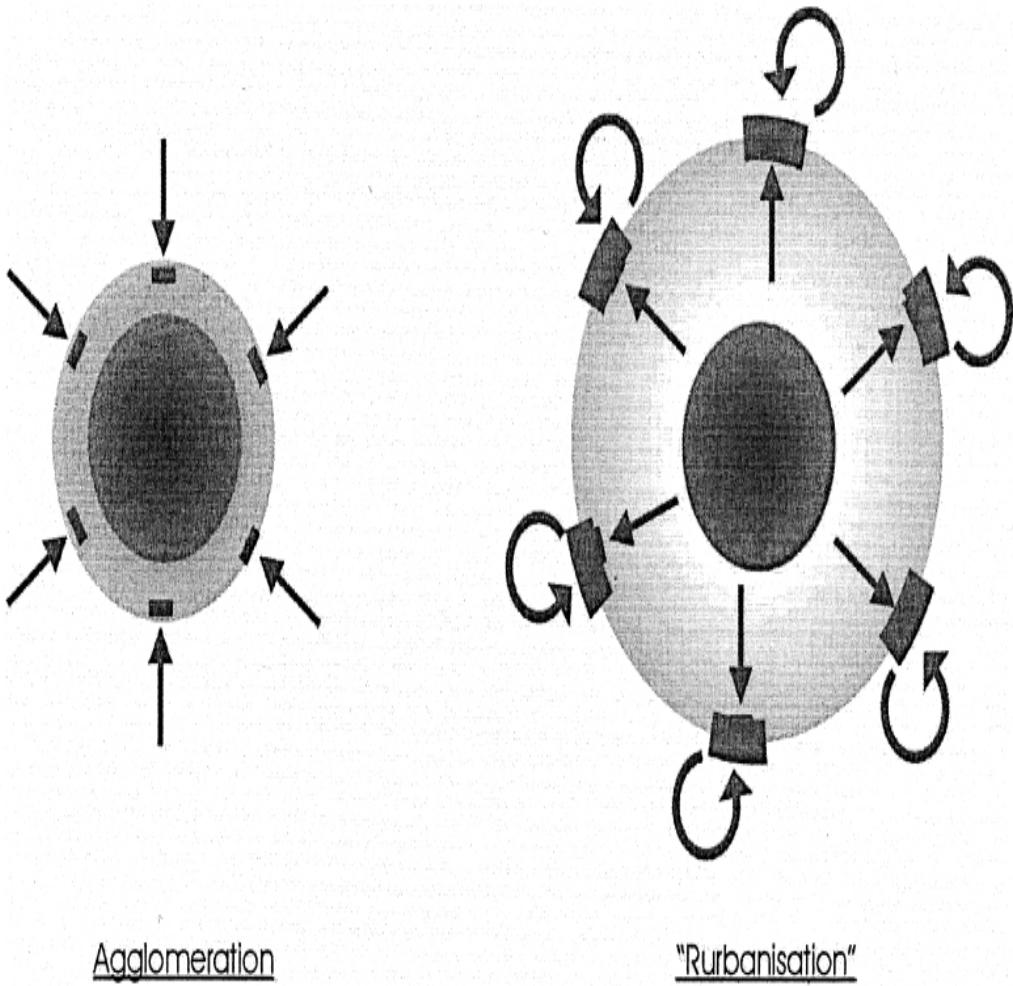


Figure 8.4 From agglomeration to ‘rurbanization’

The Stagnation of Urban Poles

Whatever forms urban sprawl may take, it benefits the peri-urban rings at the expense of the urban poles. However, a distinction has to be made between the city centre itself and its close suburbs, as they are affected very differently by urban sprawl.

The stagnation of city centres In France as in most European countries, city centres continue to play a major role in urban dynamics. They still host political and administrative headquarters and offer superior (if sometimes outdated) infrastructure, the result of a long tradition of centralization. In addition, ex-city dwellers often continue to identify with the historical centre, regardless of where they now live. City centres remain the core of cultural life and remain attractive for high-order services (retailing, health, education, culture, leisure, etc.). As a result, city centres are resistant. Population has grown slightly (primarily because of recent efforts to rehabilitate public housing) and the level of employment remains high in decision fields (e.g. company headquarters) and support functions (e.g. marketing, finance, consulting).

The spiral of decline of the older suburb The future of the close-in suburbs that welcomed the first spread of industrial activities and populations in the 1950s and 1960s (thus deserving the nickname of the ‘red ring’) is much more worrying. The lack of modern facilities and the deterioration of the environment associated with industrial decline drove out both firms and population to more attractive areas. Deprived of their former dynamism, these areas now face many urban, economic and social problems: industrial brownfields and decaying ‘grands ensembles’ (public housing estates) that host declining economic activities and the poorest social groups.

This vicious circle left these areas standing between a relatively healthy city centre and rising peripheral poles on the fringe of urban areas. The so-called ‘Town Policy’ (*‘Politique de la Ville’*) implemented by the Urban Ministry (*‘Ministère de la Ville’*) with the aim of containing the spiral of decline has proved powerless to reverse the trend. Among the 716 ZUS (*‘Zones Urbaines Sensibles’*, the official name for the set of very deprived urban areas) defined by the Government, the overwhelming majority of them being located in the close suburbs of city centres, fiscal incentives and rehabilitation programs have not been sufficient enough to repair the decline in employment and population.

Table 8.7 The decline of ZUS in France

	1990	1999
Population (thousands)	4,730.8	4,462.9
Unemployment	18.9%	25.4%
Youth unemployment	28.5%	39.5%
Employment at risk	13.5%	20.0%

Source: INSEE, *INSEE Première n°835*, (2002)

Sources of Urban Sprawl

Trying to explain the phenomenon of urban sprawl and the forms it takes is somewhat complex. Like any socio-economic issue, its sources are numerous and closely interconnected. Nevertheless, major reasons fostering these new forms of urban extension can be identified.

Technological Revolution in Transportation and Communications

The spatial impact of new technologies A first explanation has to be found in the dramatic improvements made in the field of NTIC (New Technologies of Information and Communication) over the past two decades. By suppressing physical distance,

communication devices, such as the fax or the internet, have given remote locations direct access to the exchange of information. Telecommunications, similar to the democratization of the car after World War II (Wiel, 1999), have dramatically lowered the importance of the distance factor, thereby favouring cheaper locations on the periphery.

Obviously, the importance of face to face relationships has not decreased (Rallet, 1999), and location at a reasonable physical distance from economic or social partners inside an urban area is still valuable. The NTIC revolution has certainly broadened the range of geographical possibilities. Back office activities (which require fewer physical contacts) can be relocated in the faraway periphery, while new forms of work like working at distance '*télétravail*' (telecommuting, consulting, research offices, etc.) can now be undertaken away from major infrastructure networks. In services such as night surveillance, maintenance, and long-distance administration, the new channels of circulation of information have resulted in new places of production and of consumption, allowing locations distant from markets.

The development of infrastructure on the periphery Without a significant development of transport facilities, the need for physical proximity would have made that revolution of technologies ineffective. But in almost all cities, public authorities have carefully accommodated urban sprawl. Road as well as public transport networks have been extended to distant dynamic poles, pursuing traditional hub policies. Over the past decade, the million-plus urban areas in partnership with transport companies and intergovernmental agencies have coordinated closely to deal with the rise in suburb-to-suburb trips. For example, Lyon and Paris have created new transport hubs bringing together motorways, airports and high-speed trains at the same peripheral locations.

This policy has contributed to speeding up the dynamism of already attractive locations, making them particularly suitable for logistics activities, but also supporting commuters. Sociological studies have shown that, since World War II, European city dwellers (including the French) have maintained a constant time distance of about one hour between theirs places of residence and work, and often moving further away as transportation improves. (Foucher, 2002).

Economic Change and the Evolution of Company Organization

The dispersion of company functions Globalization has deeply affected strategies of business location. The broadening of markets over national borders has fostered the concentration of companies. As a result of the large size of many multinational firms, the need for a new functional division soon appeared. The development of highly-specialized departments also meets external requirements, as back office services become more complex.

Consequently, large companies now follow strategies of location based on the benefits each department could draw from its own geographic site, instead of settling in a single place selected for its overall environment. For instance, logistics are developed next to major transport hubs, R&D activities around research and scientific poles, communications in areas with a strong positive image, and so on. High-value-added services (Alverne and

Sheamur, 1999) and commerce (De Labarre and Pazoumian, 1999) have exhibited a high degree of locational job specialization, according to recent business censuses.

In most large French cities, the dynamic poles of the peri-urban ring have responded to this evolution by developing highly differentiated externalities. The attraction of these poles has been strengthened by their perception as the locations of choice for highly-specialized corporative services.

The controversial impact of flexible and unstable employment The overall trend to more flexible and unstable jobs has had two contradictory consequences. Distance for part-time and temporary work is problematic because potential candidates are reluctant to commute long distances for poorly paid jobs (Leroi, 1999). Thus, labour-intensive industries tend to locate close to the residences of their potential workforce. On the other hand, in a period of high unemployment rates job seekers should be more inclined to accept any offer, no matter how far away the job may be. However, free time resulting from shorter working days (35 hours/week) may induce employees to give more attention to quality of life issues close to home rather than to the time they spend on commuting.

The role of real estate The emergence of new actors in the field of corporate real estate has had a significant impact on the relocation of activities around the major poles of the peri-urban ring (Loevenbruck, 1999). In the uncertain economic environment created by globalization, companies often do not consider their premises as prized assets but rather as a risk. Consequently, they try to lease rather than to buy to be more flexible in terms of ability to move at relatively low cost as market demand conditions change.

As a result, the location of activities is determined to a large extent by the requirements of business premises renters. The new real estate actors, such as ‘service industry hotel keepers,’ offer a full range of integrated services in the form of personalized and flexible premises. Given the financial risks, real estate developers choose the safest areas, i.e. fast-growing areas located on the periphery.

Such business behaviour explains the difficulties experienced by stagnating areas to reverse these trends, while the dynamic poles of the peri-urban ring continue to attract most mobile economic activities.

The Socio-Cultural Momentum of Housing

In searching for the main factors behind current urban sprawl trends, we have hitherto focussed on firm behaviour. However, spontaneous moves by residents also play a significant role in urban spread, especially via the ‘*rurbanisation*’ process.

As urban culture has become overwhelmingly dominant, the will to settle in remote areas of the periphery may seem paradoxical. These ‘urban emigrants’ do not aim for a rural way of life, but rather a rural quality of life. Being reluctant to give up their consumer habits, ‘*rurbans*’ help to maintain public facilities and attract services such as shopping centres, which quickly follow in their wake. In addition, these areas attract the high value-added small businesses owned by and employing the new urban outmigrants.

Apart from the social demand for green but yet urban spaces, more attention has been given to the social image of territorial space. The steep rise in safety concerns has dramatically strengthened residential outflows. Households increasingly refuse to live in the large apartment blocks built in the 1950s and 1960s. With a high proportion of public housing, these residential units, mainly located in the close-in suburbs of the inner city, host severe social problems. The perception of these areas (the word '*banlieue*', or suburb now evokes the urban crisis) deters potential residents even more than the living conditions themselves. On the other hand, the positive image conveyed by the rural or traditionally upper class areas have a strong attraction power. Now, the social image of territory, reinforced by economic dynamism, has an increasing role in residential locational choice.

Adapting Urban Planning and Governance

The economic, social, and environmental outcomes of urban sprawl deserve specific attention. The dramatic gaps between aging suburbs of the urban pole and the emerging poles of attraction in the peri-urban ring foster economic disparities, marginalizing entire sections of the society. The results of the 2001 presidential and general elections illustrated the dangers of territorial fragmentation. While the votes of the extreme right and extreme left wings remained below the 15 per cent line in the inner-cities and the emerging peripheral towns, they reached up to 40 per cent in the interstices, especially in the declining old suburbs.

Moreover, spatial extension creates new transport issues by saturating the metropolitan networks. By expanding into low-density areas, urban sprawl cuts the benefits of concentration (e.g. sharing facilities) around a single centre.

In addition, local competition among administrative entities, eager to attract the most dynamic populations and economic activities, generates disorganised development at the expense of the overall quality of the urban environment. The divided pattern of the French territory, with its large number of tiny '*Communes*' (Towns) and now outdated '*Départements*' (Counties) at the local level, has impaired the implementation of coherent planning policies. In the 1980s, administrative programs of inter-communal collaboration were designed to facilitate the extension of central towns to their close-in suburbs. However, these common political structures, like the '*Communautés Urbaines*' or '*Districts Urbains*', were limited to the Urban Pole itself and are unable to handle the problems of sprawl on the outer periphery.

As a result, the French Government has implemented legislation designed to promote more appropriate forms of territorial governance:

- i. The Voynet Act, which introduced the concept of Urban Areas, urges their member communes to design joint projects determining priorities in economic development, social cohesion, transport, housing and the environment. Projects are to be contracted on a purely voluntary basis.

- ii. The Chevènement Act calls for the transfer of economic functions from the communes to new common administrative structures in the same fields as those mentioned in the Voynet Act. The implementation of such inter-communal entities is promoted through fiscal incentives.
- iii. Finally, the recent SRU (Urban Recovery Plan) Act compels jurisdictions to co-ordinate their planning, regardless of their administrative status. In addition, the goal of a uniform 20 per cent distribution of public housing per commune was established.

Among those three complementary Acts aimed at reinforcing co-operation among different territorial institutions, the SRU Law is particularly interesting, because of its emphasis on spatial coordination within a flexible framework.

A Case Study of the Ile-de-France, 1990–1999

Ile-de-France is one of 22 French administrative regions. Its 12,012 sq. km are covered by the Paris Urban Area, which has spread out into surrounding regions. Urbanization has been so dynamic that the former peri-urban ring has been fully absorbed by the Urban Pole, making the concept of Urban Area somewhat irrelevant. In order to differentiate the older from the most recent suburbs (including the five New Towns), we introduce the terms of ‘First Ring’ and ‘Greater Ring,’ as defined in [Figure 8.5](#).

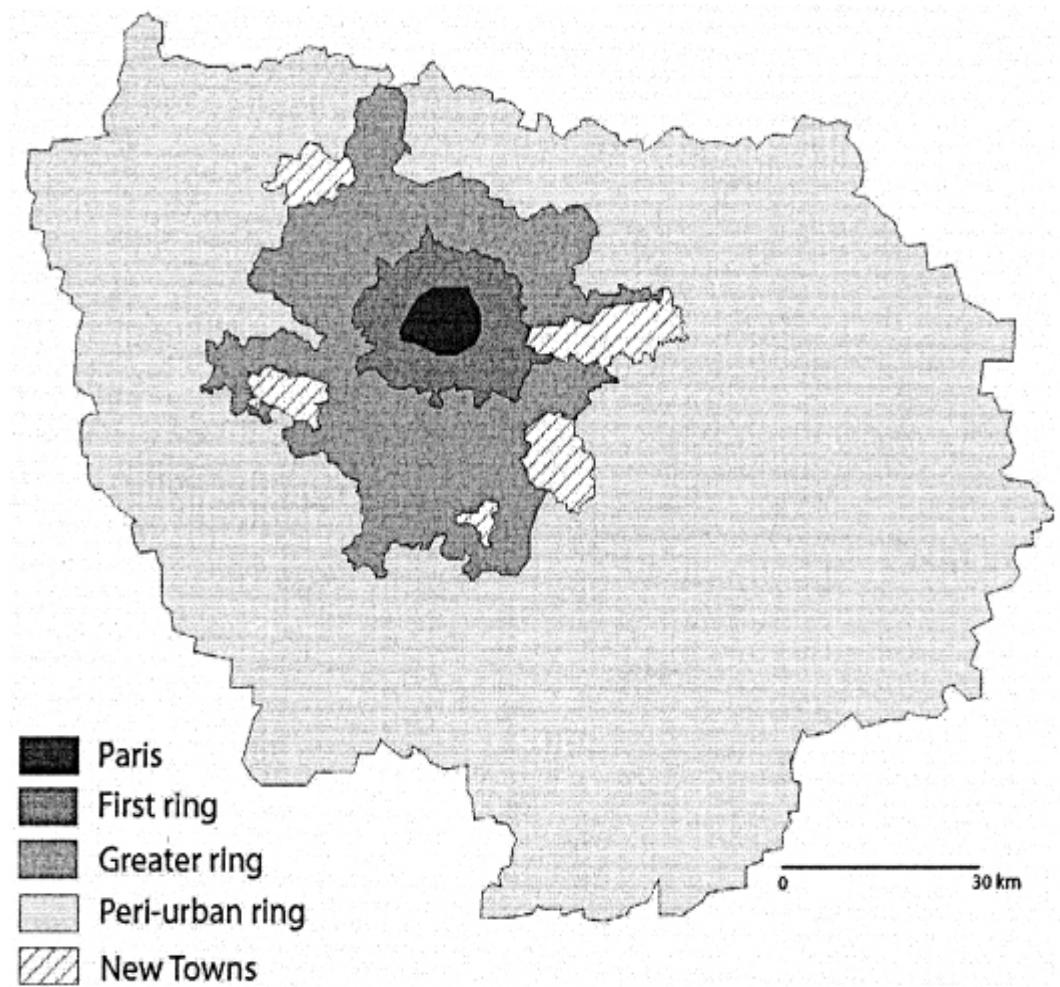


Figure 8.5 Terminology used for the Ile-de-France case

Facts and Figures

The data in the first half of the paper shows that national trends are more marked in the Ile-de-France than in any other French agglomeration.

Spatial extension In the Ile-de-France, the dynamism of the peri-urban ring has been so strong that the interstices between peripheral poles and the central agglomeration have been filled up. [Figure 8.6](#) shows the resulting extension of the greater Paris agglomeration, which has already reached the New Towns that were initially cut off from the central urban fabric.

Population Between 1990 and 1999, the total Ile-de-France population rose by 2.7 per cent. However, that growth, close to the national average, was very uneven. The city of Paris continues to lose inhabitants to the Greater Ring, but the peri-urban ring has become the most dynamic area ([Table 8.8](#)).

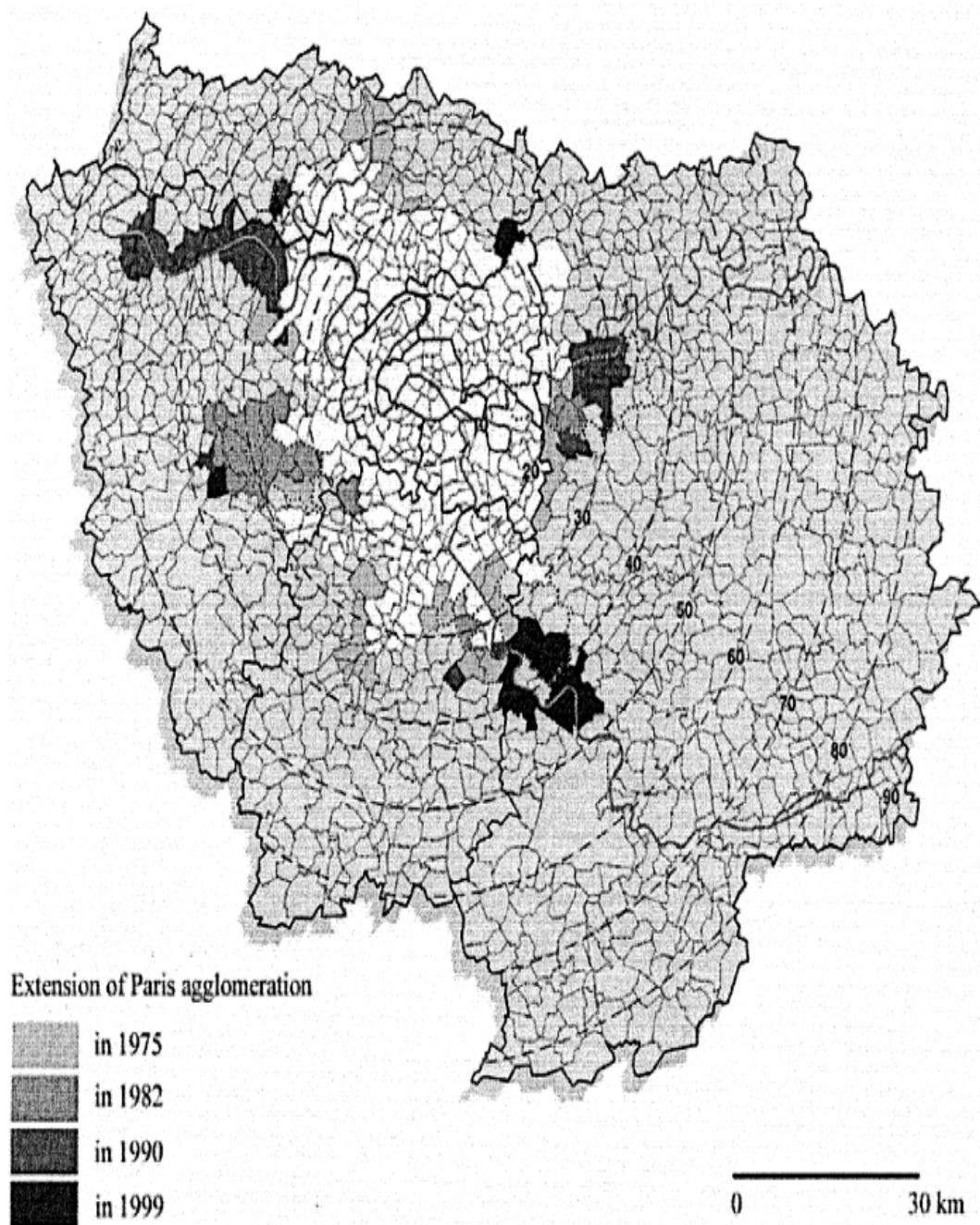


Figure 8.6 The extension of Paris agglomeration since 1969

Source: IAURIF and INSEE, *Atlas des Franciliens* (2000)

Table 8.8 Population distribution in the Ile-de-France

	1990 (thousands)	population1999 (thousands)	population1990–1999	annual growth rate
Paris	2 152.4	2 125.2		-0.14%

First Ring	3 009.6	3 032.4	0.08%
Greater Ring ⁴	4 038.4	4 216.6	0.48%
Peri-urban ring	1 460.1	1 751.6	2.04%

Source: IAURIF and INSEE, *Atlas des Franciliens* (2000)

Economic activity With respect to economic activity, trends are very similar to those of population. The inner city continues to decline while the periphery experiences strong economic growth (Table 8.9). The data do not separate out the First Ring from the Greater Ring so the ‘Agglomerated Suburbs’ numbers are misleading because stagnation in the First Ring is more than counterbalanced by dynamic growth further out. As with population, the peri-urban ring performs well in terms of employment.

As noted for France as a whole, and for the same reasons (land is still available and skills more developed in the Greater Ring), the fringe of the greater Paris region is less attractive for firms than for households, who have been locating at greater distances to attain the ‘rurban’ quality of life.

Table 8.9 Employment distribution at place of work in the Ile-de-France

	1990 distribution	1999 distribution
Inner City	35.1%	32.7%
Agglomerated suburbs	57.1%	59.2%
Peri-urban ring	7.8%	8.1%

Source: INSEE, *INSEE Première n°767* (2001)

This brief review of urban sprawl in the Ile-de-France shows that Paris has shared in national trends. Nevertheless, land pressures are so high that the vacuum created by the emergence of distant peripheral poles has been rapidly consumed by the classical spreading of the central agglomeration along radial axes, pulling the frontier of the peri-urban ring even further out. The dynamism of this urban sprawl process is unique in France.²

Urban Sprawl and Demographic and Economic Deceleration in the Ile-de-France

Constituting Jurisdictions of the Territory

The Ile-de-France appears to be a good example of a dynamic urban sprawl process:

- i. The City of Paris, the core of the agglomeration, experienced a slight decline in both population and employment in the 1990s.
- ii. Meanwhile, the suburban First Ring, better known as the ‘red belt’ in reference to its original industrial role, has suffered a continuous loss of population and economic activity.
- iii. On the other hand, the Greater Ring has experienced dynamic urban growth, partly fostered by the five New Towns launched in the late 1960s: *Cergy-Pontoise*, *Saint-Quentin-en-Yvelines*, *Evry*, *Sénart* and *Marne-la-Vallée*. However, fast growing poles such as *Roissy* and *Saclay* have also been important.
- iv. Finally, as a result of the ‘rurbanisation’ process, the peri-urban ring now spreads out into areas outside of Ile-de-France administrative limits.

The initial spatial leap in the metropolitan extension and the subsequent re-organization in the Greater Ring as a stage of reorganization of regional space (Cohen, 1999). Start-up businesses incubate in Paris before relocating to the more dynamic poles of the greater periphery. At the regional scale, these poles become structured into an archipelago economy (Veltz, 199x).

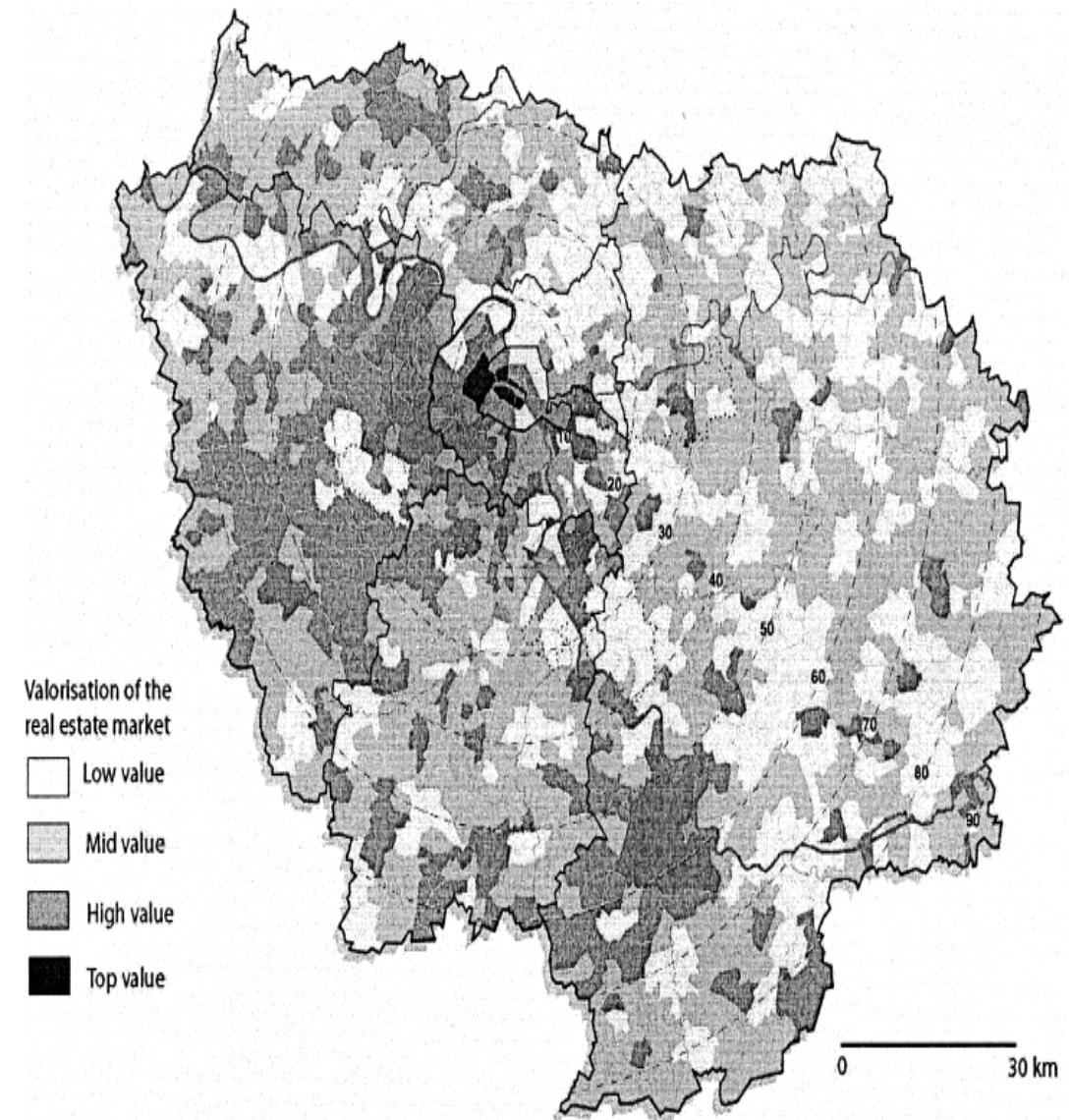


Figure 8.7 The distribution of housing values in the Ile-de-France

Source: IAURIF and INSEE, *Atlas des Franciliens* (2000)

Qualitative Spatial Organization

A detailed study of the spatial distribution of population and economic activities can give us qualitative information about change in these areas.

Population Qualitatively, the location of residents does not follow the same radial distribution as that of firms. Generally speaking, Western Ile-de-France hosts better-off inhabitants than the Eastern side with higher housing prices (Figure 8.7). This reflects both historical and environmental reasons (e.g. the winds carrying industrial pollution to the east and the woodsy valley in the West).

At the microscale, there are striking contrasts. Social composition may vary by street. Suburban communes may have an old city centre where the original population live, obsolete apartment blocks where the poor newcomers live, and recent pavilion areas for the middle class and the well-off.

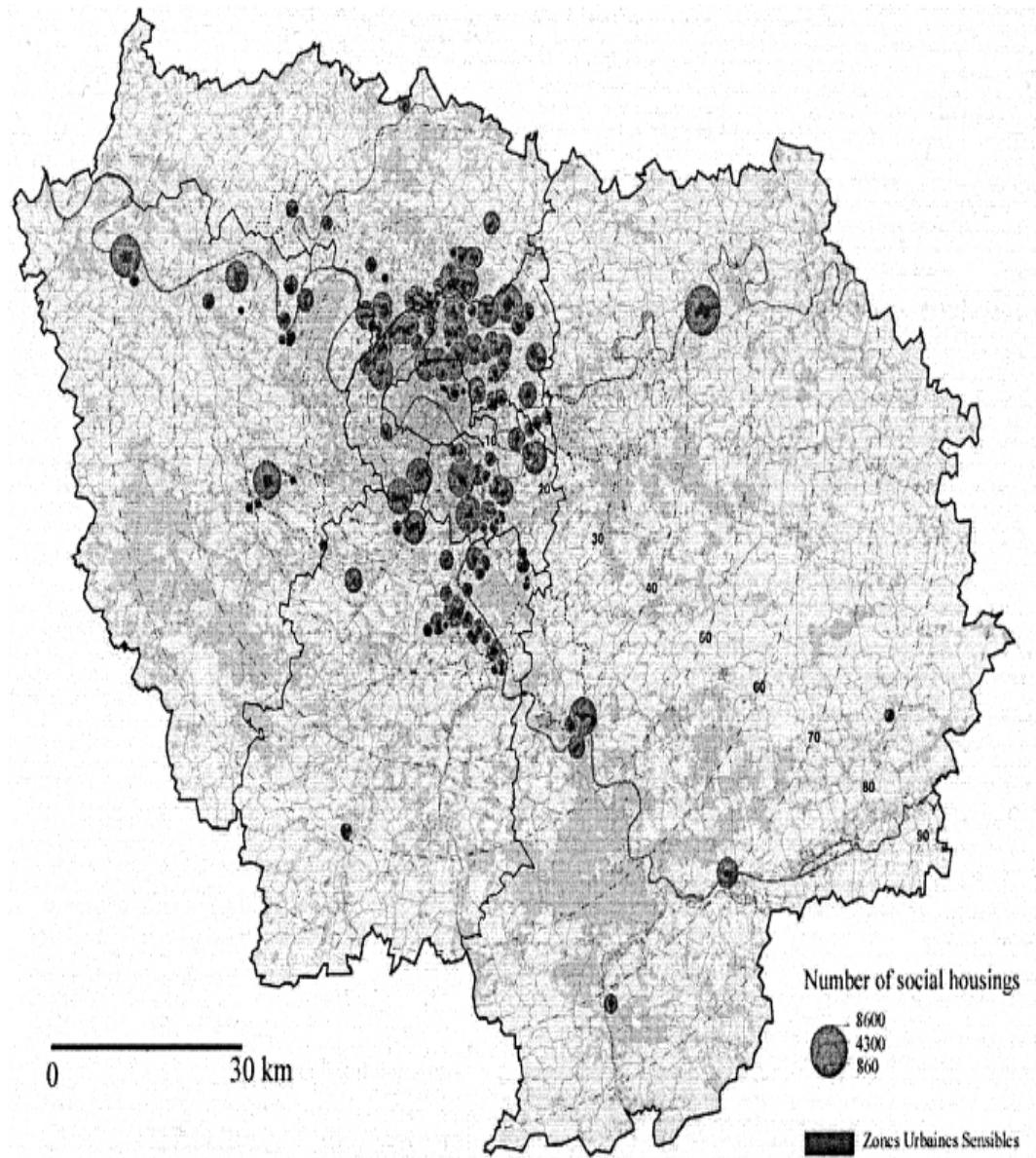


Figure 8.8 The spatial distribution of public housing in the Ile-de-France

Source: IAURIF and INSEE, *Atlas des Franciliens* (2000)

As for other French agglomerations, the First Ring contains the highest proportion of the have-nots. Large public housing estates were built there in the 1950s and 1960s to accommodate sharp demographic growth (Figure 8.8). The fast deterioration of the urban and social environment led many with sufficient resources to leave, while rural and foreign immigrants moved in. In addition to the social issues associated with segregation, the First

Ring municipalities experienced increasing difficulty in meeting welfare demands because of a decline in fiscal revenues, especially from property taxes.

Economic activity The inner city of Paris retains a high power of attraction because of its excellent facilities and a high-value image. A long-established tradition of centralization concentrated all the national administration in the capital city, making Paris the inevitable location for most decision centres. As for other cities in France, business headquarters and some specialized services (such as luxury retailing or high-order consumer services in health, culture and education) still tend to locate in the city centre. Tourism is a significant activity with over 20 million foreigners visiting the cities every year.

On the other hand, the First Ring made up of the old industrial suburbs, stretching from the North-East to the South of the core city, is the main victim of urban sprawl. The weak economic fabric of the First Ring is unable to attract fast-growing activities, and only decaying production units, low value-added logistics and second class services remain. The crisis of the First Ring in the Ile-de-France has been aggravated by administrative requirements for company expansions (to curb the economic dominance of Greater Paris in favour of the provinces), and this has compelled many growing business to relocate. As a by-product of the decentralized fiscal system, poorer municipalities have had to raise tax rates in order to fund their infrastructure and other policies. As a result, the initial intention to improve the business environment for companies has deterred potential new investors. The lack of inter-communal co-operation in the Ile-de-France has worsened a problem partly overcome in the provinces because of redistributive mechanisms.

However, the old suburbs West of Paris have managed a transformation, moving from industry (Renault factories in Boulogne-Billancourt) to service activities (especially communications, accounting and finance). La Defense, in particular, has contributed to a large extent by making the Seine Western valley an extension of the Paris business district.

Also, in the Greater Ring several poles of the peri-urban area have done particularly well via strong economic specialization:

- i. North of Paris, the Roissy plateau has benefited from the rapid expansion of Charles de Gaulle Airport, and from its hub of fast communication networks (motorways A1 and A86, high-speed trains to Lille, Brussels and London, and suburban trains). This location is particularly attractive to high-value-added logistics and transport services.
- ii. On the Eastern periphery, near Eurodisney, good accessibility and huge land reserves have made the New Town of Marne-la-Vallée a fast-growing pole for leisure and commerce, with huge projects like Val d'Europe in progress.
- iii. Although less successful than its other regional counterparts, the New Town of Sénart has begun to receive land-intensive activities (e.g. industry, warehousing).
- iv. The development of the Southern periphery is articulated along a discontinuous East-West axis linking the New Towns of Evry and Saint-Quentin-en-Yvelines, and including older dense economic areas such as Massy, Orly and Saclay. In spite of a large range of diverse activities, this prosperous strip specializes in knowledge industries, with numerous R&D labs and some of the best French universities.

As a consequence of the polarization around the New Towns of the peri-urban ring, the Ile-de-France is developing like the petals of a flower (Figure 8.9). The interstices between the city of Paris city and the peripheral poles poles are stimulated by new forms of exchange fostered by the economic specialization of each pole. On the other hand, some metropolitan spaces are suffering from the fierce competition, and experiencing similar declines to the decaying areas of the First Ring (685 out of the 1,300 Ile-de-France municipalities have experienced a decline in services).

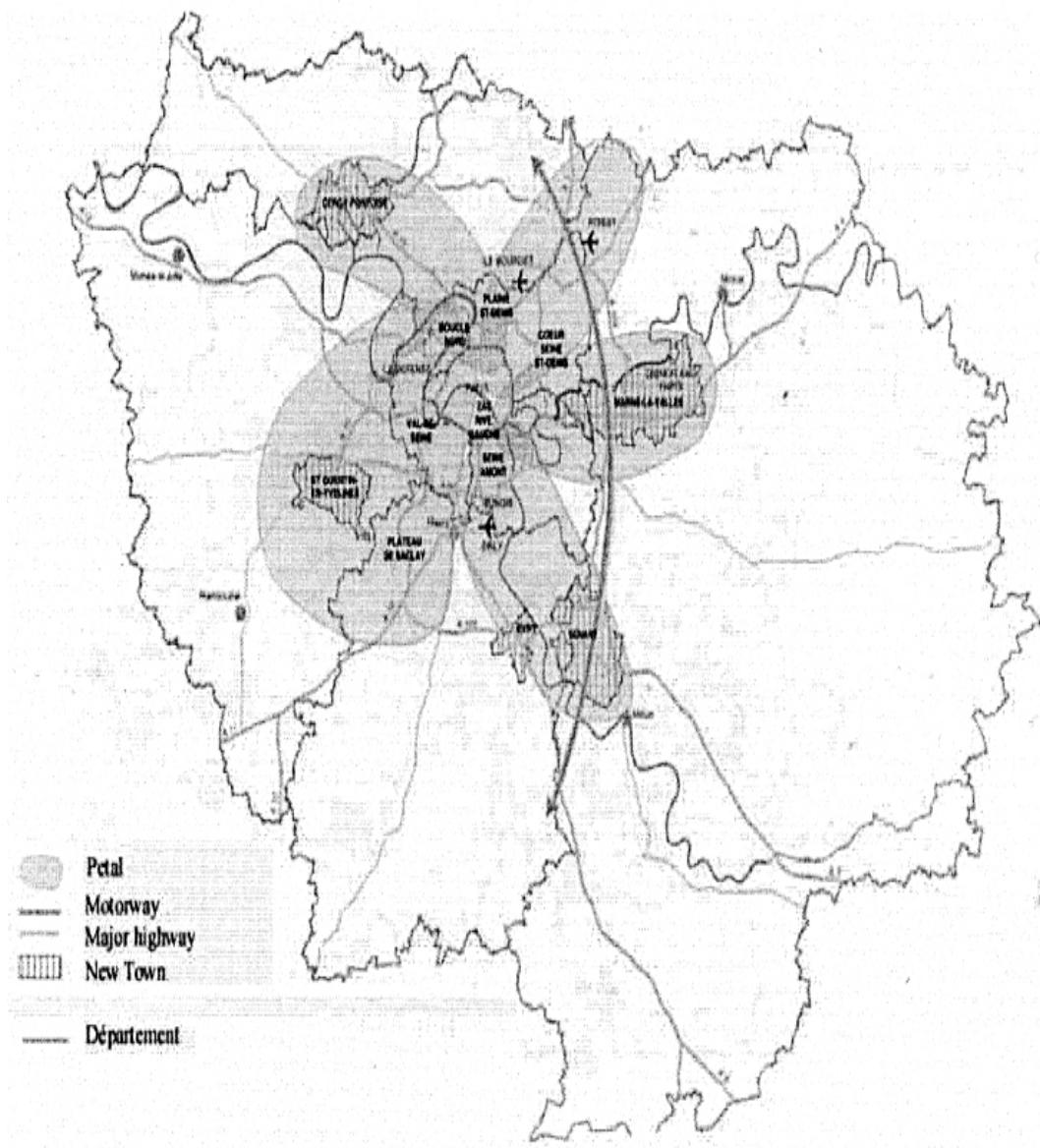


Figure 8.9 Key locations in the Ile-de-France

Source: Gollain, Marc and Sallez, Alain, *Emplois et Territoires en Ile-de-France: Prospective* (1999).

Conclusions

This brief account of the major trends experienced by French agglomerations has emphasized the new forms of urban sprawl in France: a spatial leap to the greater periphery and re-polarization in the specialized centres of the peri-urban ring. Given the dramatic urban growth on the periphery, we can ask the question whether urban sprawl is the deathknell for the radial monocentric city. Theorists of peripheral urbanism have been vigorously advocated by those who note the emergence of urbanized archipelagos in all major metropolitan areas (Ascher, 1999; Dubois-Taine, 1998). However, the fashionable ideology of urban renaissance has recently suggested a revival of the core city and some resistance to centrifugal forces.

More generally, the question of urban sprawl raises the issue of the role of the centre and the meaning of centrality as a whole. Gashet and Lacour (2001) explain the success of peripheral poles as the result of the de-territorialization of economic centralities. As network activities, new technologies favour agglomeration centrality. However, the centrality may be cut off from the central core, but can emerge at any location provided with knowledge and communication connections. Thus, the polarization of dynamic activities can occur in spaces free from urban congestion. However, creating centrality is not the same as creating a city with its key physical and symbolic components. In Europe, and especially in France, historical city centres remain the main face-to-face contact point and the heart of the agglomeration.

This analysis of the coexistence of a single physical centre and several emerging peripheral centralities (or poles) is shared by most authors. The controversy arises about urban policy priorities, whether to focus on the renewal of the old core city or on the promotion of the peripheral poles.

Harmonious development for large agglomerations may depend on their ability to validate these distinct centralities, simultaneously promoting economic dynamism on the periphery while revitalizing functions in the inner city (e.g. private and government decision centres, image-based service activities, culture, and a thriving high-density quality of life.). This implies a close coordination of public transportation and urban development policies.

Glossary

Commune Parish or municipality (36,000)

Département County (95)

Région Province (22)

New Town State planned cities since the 1960s (9)

FNAU (Fédération Nationale des Agences d'Urbanisme) Federation of Urban Planning Agencies

IAURIF (*Institut d'Aménagement et d'Urbanisme de la Région Ile-de-France*) Ile-de-France Planning Agency

INSEE (*Institut National des Statistiques et des Etudes Economiques*) French National Institute for Statistics

¹ An urban unit is a single town or a group of contiguous towns whose total population exceeds 2,000.

² The peri-urban ring accounts for only 8.1 per cent of employment and 15.7 per cent of the population of the Paris Urban Area, compared with the national average of 11.2 per cent and 25.5 per cent.

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Chapter 9

Urban Sprawl: Is There a French Case?

Denise Pumain

Introduction

Urban sprawl has become established in France with original characteristics that could be summed up as the result of the intermediate position of the country between Northern and Southern Europe. From this situation, several paradoxes emerge: although the most intense phase of the process of urban sprawl, from the 1970s to the beginning of the 1980s, was rather late in comparison with other countries of Northern Europe, the process has been strongly established in the country, more than in Spain and even in Italy, for example. The French situation is nonetheless quite representative of the collective European experience, favouring a combination of the advantages of compact cities and those of more widely dispersed settlements. Thus, in spite of its strength, urban sprawl in France does not emerge as the expression of an ‘anti-urban’ ideology. The benefits of an attachment to city centres and to the urbanity inherited from the Latin culture are real. Even if the rural heritage of France marked a whole generation of adults (half of the population was still rural in 1950), and can explain a deep attachment to the countryside, urban heritage continues to have strong symbolic and economic importance in France. The evolution of real estate and property values, as well as the very central location of work and of most services, bears witness to this.

The search for a form of urban development that would be adapted to European social, political and cultural practices is expressed in the orientations defined by the European Union (European Spatial Planning Development Program, 1999). The recommendations in this document move in the direction of an urban development of a polycentric type, and involve partnerships between city and countryside at different levels of activity. It is evident that the efficacy of the planned policies depends on a good knowledge of contemporary trends in urbanization, given the diversity of the urban systems and the variety of forms of urban government from country to country (SPESP, 2001). We are reminded here of the specific nature of the political and institutional setting of urban development in France. Without being as interventionist in urban planning as Holland or Sweden, the French state has certainly played an important role in the extension of the cities, via its policies related to housing and transportation. The spatial fragmentation of the territory into very small communes is in part compensated for by the existence of general planning approaches, and by the emergence of cooperation between municipalities. The spatial extension of the cities has therefore become a political question, which belongs

to the issue of the durability of development, at the same time that it has given rise to new definitions of urbanized space.

New Definitions of Urbanized Space

Because the growth of cities is brought about not only via an increase in the population within fixed limits, but also through spatial expansion, it is always difficult to measure. International comparisons are still complicated by the differences in ways of defining the urban population and demarcating city limits in the different countries (Pumain and Saint-Julien, 1991).

From Morphological ‘Agglomerations’ to ‘Aires Urbaines’

French territorial divisions (NUTS 5 level of local units) are among the smallest in Europe (1.5km² and 1600 inhabitants on average, but half of the communes have fewer than 400 inhabitants). The principle of defining the multi-communal statistical urban units was therefore accepted very early. The *urban agglomeration*, created in 1954, was defined on the basis of the morphological criterion of the continuity of what was built (less than 200 m between two edifices), and a population threshold of 2,000 inhabitants. It includes the centre of the commune, which corresponds to the most populated commune of the *agglomeration* (usually the historic centre), and the communes of the suburbs.

In 1996, the *aires urbaines* replaced the Z. P. I. U. (Zones of Urban and Industrial Settlements), which were considered to be too extensive (they contained three quarters of the communes and especially 96 per cent of the French population in 1990). An *aire urbaine* is composed of an urban centre and a surrounding urban ring. *Urban poles* are urban *agglomerations* that number more than 5,000 jobs. Formed from contiguous communes, the outer urban ring brings together communes in which at least 40 per cent of the active members work in the urban centre or in a secondary centre that is already attached to the urban centre by means of this criterion. *Espace à Dominante Urbaine* (space with a dominant urban character) includes *aires urbaines*, but also *communes multipolarisées*'s, which send at least 40 per cent of their population into several urban centres without any one of these centres reaching this threshold. The map in [Figure 9.1](#) represents in dark shade the urbanized areas which constitute the central part of the ‘aires urbaines’ whereas the spatial extension of their outer rings appear in light shade.

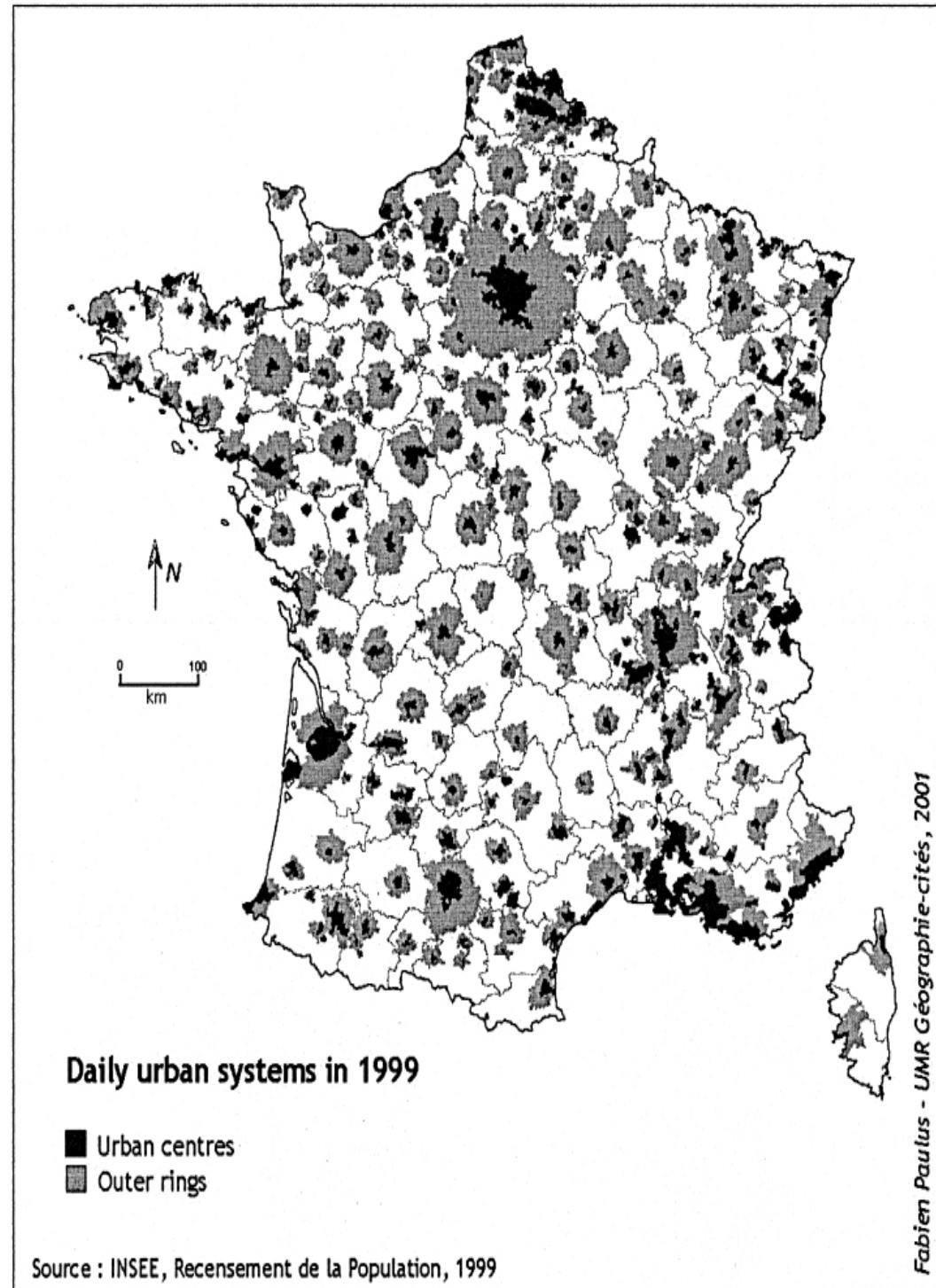


Figure 9.1 Urban centres and outer rings of the French ‘aires urbaines’ in 1999

The Extent of Urbanized Space

The database constructed by Julien (2001) and analyzed by Paulus (Paulus and Pumain, 2002) reconstructs for the censuses from before 1990 the different demarcations arrived at for urban areas. The definitions of the *agglomérations* and *aires urbaines* provide two complementary pictures of French urbanization (Table 9.1). In the census of 1999, 1,995 *agglomérations* were counted, spreading across some 6,000 communes, that is, 44.2 million inhabitants, and a surface area of 100,000km². Grouping 75.5 per cent of the French population in 18 per cent of the territory, with an average density of 442 inhabitants per km², the *agglomérations* constitute dense nuclei of urbanization. The *aires urbaines* are at one and the same time less numerous and more spread out: these 354 pools of work and daily life centered on the largest labour markets include a somewhat larger population (45 million inhabitants, that is, 77 per cent of the French population), but more particularly, spread out over a much wider surface area (13,900 communes, 176,000km², that is, 32 per cent of the territory). The average density of these zones under a strong urban influence is only 250 inhabitants per km², that is, only twice the average density of the French population.

Table 9.1 The development of urbanization in France according to two definitions (1968–1999)

Urban zoning	Demographic and spatial characteristics	1968	1975	1982	1990	1999
Agglomerations	No. of entities	1,520	1,642	1,781	1,890	1,995
	No. of communes	3,958	4,450	4,879	5,300	5,956
	Surface (km ²)	68,827	76,227	83,323	89,642	100,052
	Population	34,817,487	38,333,592	39,850,831	41,894,167	44,201,027
	Average Density (persons per km ²)	506	503	478	467	442
Aires urbaines	No. of entities	319	347	359	361	354
	No. of communes	3,502	6,064	8,313	10,687	13,908
	Surface (km ²)	42,733	71,756	100,218	132,090	175,997
	Population	30,106,017	34,918,289	37,725,248	41,277,858	45,052,901
	Average Density (persons per km ²)	705	487	376	312	256

Source: INSEE – Censuses of Population, Paulus (2002) and Julien (2001)

Spreading Out. The Process: a Wave of Urbanization and Peri-Urbanization

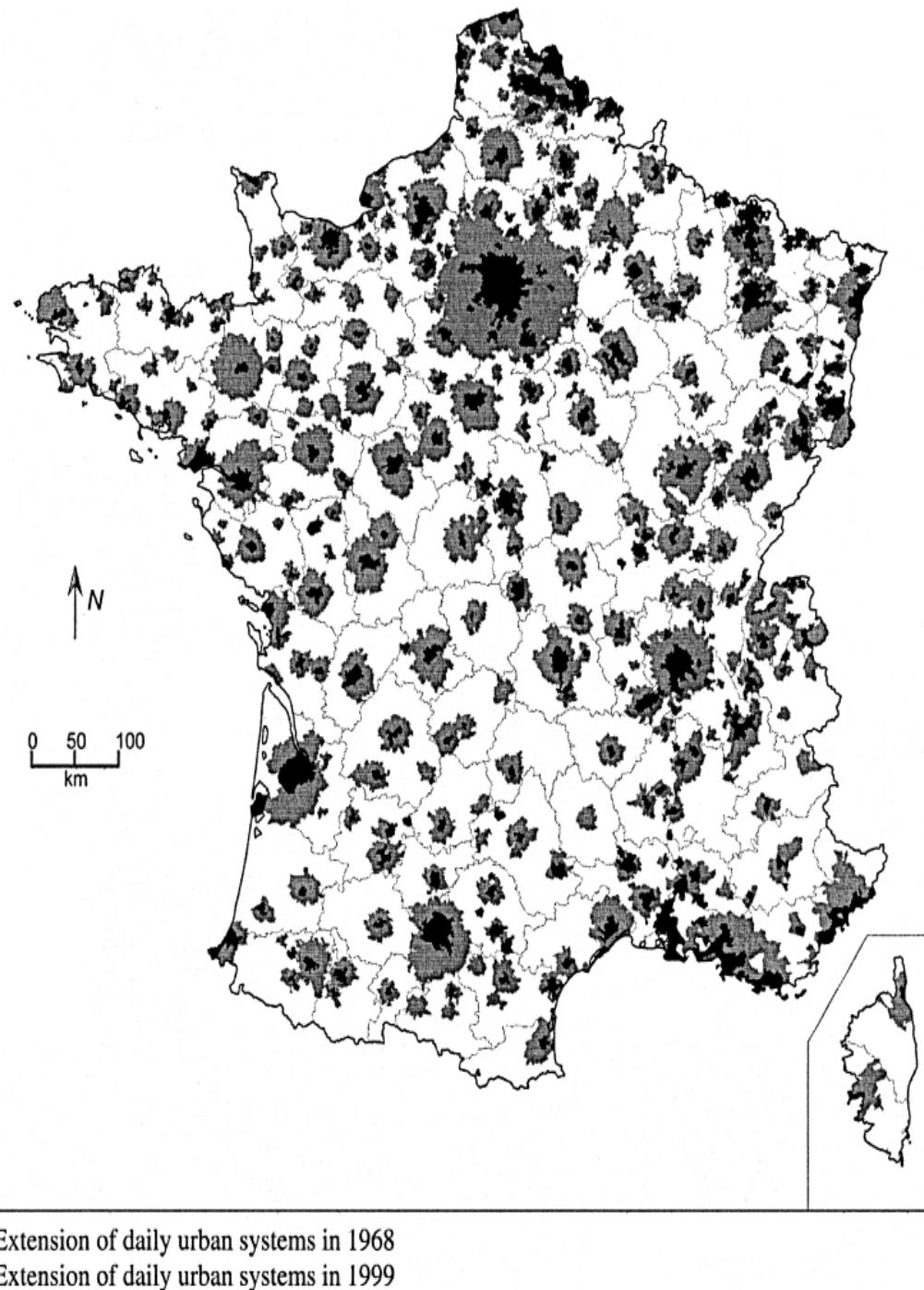
The present configuration of population growth results from a cycle of urbanization that has profoundly transformed the French landscape for fifty years. A high rate of demographic and economic growth, accompanied by a strong rural exodus, was expressed in the beginning by a very rapid growth in the population of the cities (on the order of 2 per cent per year between the years 1950 and 1975), and up until the 1960s, by an increase in urban densities. Because of the decrease in fertility beginning in 1964, and the gradual drying up of the reserves of the rural population, the growth in urban population slowed down, which is reflected in average annual rates of less than 1 per cent, and a change in its composition, as natural growth began to outnumber the contribution from migrations.

In particular, the most spectacular novelty in the ways the cities have been expanding since the 1970s is in geographical dispersion. This process results at one and the same time in a transfer of the growth of the cities towards more remote rural peripheries, and a spacing out of populations that has tended to lower urban densities.

Peri-Urbanization

Since the 1960s, the growth of the cities has occurred far beyond urban *agglomérations*, dynamizing rural districts situated on their periphery, in zones that were no longer being built as a continuation of the pre-existing urban fabric, but which possessed or established daily and close functional ties with the *agglomération* and its city centre. [Figure 9.2](#) illustrates this spatial expansion by comparing the current delimitation of the *aires urbaines* with the one, much more restricted, that they would have had in 1968.

When we measure this spatial extension of urbanization in the framework of the *aires urbaines*, it takes on its full significance: between 1968 and 1999, the surface area ‘urbanized’ in this way was multiplied by five, the number of urban communes multiplied by 4, while the total population increased by only 50 per cent. While the surface area of the *agglomérations* increased by only 1.2 per cent a year during this whole period, those of the *aires urbaines* grew in much more significant proportions: 4.7 per cent per year ([Table 9.2](#)). In both cases, the year 1975 marked the beginning of a slowdown in this process: since that date, the *aires urbaines* have continued to spread out in surface area, but the present rate is no more than 3.2 per cent per year, while that of the *agglomérations*, after a drop, remains about 1.2 per cent per year.



Source : INSEE, Recensements de la Population

Fabien Paulus - UMR Géographie-cités, 2001

Figure 9.2 Spatial extension of ‘aires urbaines’ from 1968 to 1999

The spatial extension of the cities was thus considerably more rapid than the growth of the population. On the periphery, the forms of urbanization were more and more diluted on the borders of the peri-urbanization zones, while on the contrary, there was some concentration in the first rings of the periphery closest to former suburbs which became

integral parts of the *agglomérations*. In both cases, however, the process of peri-urbanization is combined with a process of reduction in the density of the resident population in the urbanized zones, which helps to explain the urban spatial diffusion.

The Reduction in Population Densities

Whether measured in the setting of *agglomérations* or of *aires urbaines*, urban population densities have not ceased to decline since 1968 (Table 9.2). This decrease is slow, around 0.4 per cent per year in the *agglomérations*, and irregular, with two phases of greater intensity near the end of the 1970s and the 1990s. In the setting of the *aires urbaines*, the strong initial density particularly reflects the fact that at that time they involved the largest cities (on average, densities rise with city size), and the rapid reduction in densities reveals the gradual integration of smaller urban centres, and especially numerous sparsely-populated rural communes.

Table 9.2 Average annual rates of variation in urban expansion in France

Urban Zoning	Demographic characteristics	spatial	'68-	'75-	'75-	'82-	'82-	'90-	'90-	'99-	'68-
			'75	'82	'90	'99	'99	'68			
Agglomerations	No. of entities		1.11	1.17	0.75	0.60	0.88				
	No. of communes		1.69	1.32	1.04	1.31	1.33				
	Surface (km ²)		1.47	1.28	0.92	1.23	1.21				
	Population		1.38	0.56	0.63	0.60	0.77				
	Average Density (persons per-km ²)		0.08	-0.71	-0.29	-0.62	-0.44				
Aires urbaines	No. of entities		1.21	0.49	0.07	-0.22	0.34				
	No. of communes		8.16	4.61	3.19	2.97	4.55				
	Surface (km ²)		7.69	4.89	3.51	3.24	4.67				
	Population		2.14	1.11	1.13	0.98	1.31				
	Average Density (persons per-km ²)		5.15	-3.60	-2.30	-2.19	-3.21				
Metropolitan France	Population		0.81	0.47	0.52	0.37	0.53				

Sources: INSEE – Censuses of population, Paulus (2002) and Julien (2001)

The contrast in population density between the city centres and the peripheries has diminished in all *agglomérations* of more than 20,000 inhabitants. However, in no city has a reversal of the centre-periphery gradient been observed, either in population density or in terms of real estate and property values.

The process of spacing out is also measured in the inequalities in demographic growth observed in the various sectors of the *aires urbaines* according to present boundaries ([Table 9.3](#)). These illustrate an undulating spread in growth, initially greatest in the suburbs, then in the peri-urban rings beginning in 1975–1982, when the central communes were beginning a demographic decline. During the last decade, with the reduction in the general growth of the urban population, there has been a tendency for the intensities of growth in all the component parts of the urban population to converge.

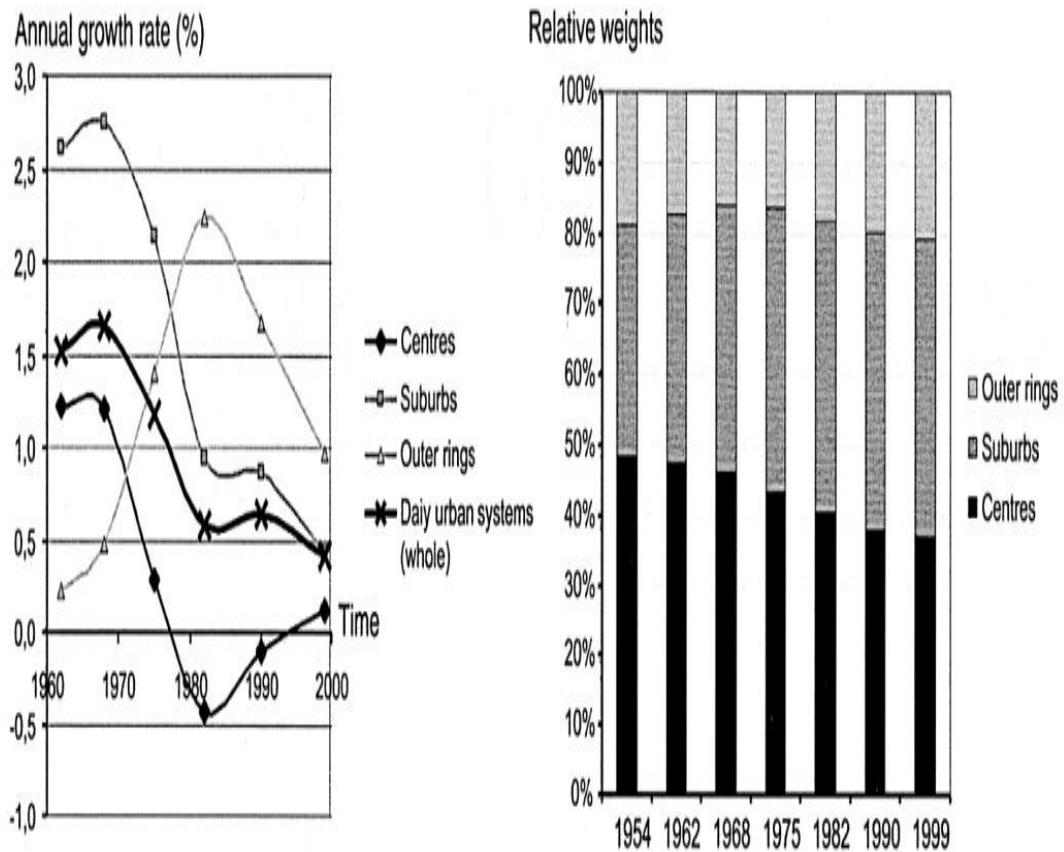
Table 9.3 Demographic changes in city centres, suburbs and peri-urban rings in France (1968–1999, 1999 Boundaries)

Components of Aires Urbaines	Aires Average population (%)	'68-'75	'75-'82	'82-'90	'90-'99
City centre	0.29			-0.44	-0.10 0.12
Suburbs	2.13			0.94	0.87 0.43
Peri-Urban Ring	1.40			2.24	1.66 0.97
Total of the Aire Urbaine	1.19			0.58	0.64 0.42

Sources: Censuses of population, INSEE, and Paulus (2002)

The spacing out of the urban populations has been perpetuated by the pattern of residential migration, which has produced a centrifugal dynamic of populations, from the centre towards the suburbs and the peri-urban ring. The peri-urban sector owes its dynamism to the populations that have chosen to establish themselves there. It is the opposite of the increase in births that made it possible to maintain the population of the centres, which a significant number of inhabitants were deciding to leave.

In total, the segment of the population of the *aires urbaines* living in the central communes has diminished at a regular rate, dropping from 46 per cent in 1968 to 37 per cent in 1999, while that of the suburbs has become preponderant, progressing from 38 to 42 per cent, and that of the peri-urban rings has grown from 16 to 21 per cent. The type of life we could call ‘rurban’ involves only about a fifth of the urban populations ([Figure 9.3](#)).



Source : INSEE, Recensements de la population

Fabien Paulus - UMR Géographie-cités, 2001

Figure 9.3 The evolution of population growth rates according to the components of 'aires urbaines,' 1968–1999

Jobs Spread Out Less Rapidly than Population

Job locations still remain highly concentrated in the central sections of the *agglomérations* (Lainé, 2000): in 1999, more than 41 per cent of jobs were located in the central communes, and 30 per cent in suburban communes. Admittedly, the number of jobs located in the central communes dropped by 1.3 per cent per year between 1990 and 1999, but it continued to rise in the suburbs much more significantly than in the peri-urban ring (1.3 per cent as opposed to 0.4 per cent). Today fewer than 10 per cent of jobs are established in the peri-urban rings, while the number of jobs in the rural communes (16 per cent of the total) continues to fall (those of the *communes multipolarisées* remain proportionately stable, that is, at 3 per cent).

In the periphery of the largest cities, secondary job centres have emerged via the absorption of preexisting urban centres, the implantation of new activities near transportation infrastructure (e.g. airports, motorway intersections), or in new zones of urbanization (La Défense west of Paris, the new towns, or the technopolitan zones in

regional metropolises). The growth of these new job zones has taken place very rapidly, without however posing a threat to the preeminence of the principal urban centres. The profile of their activities is often more specialized (for example, in logistic activities or in large commercial complexes) and less diversified than the profile of city centres (Guérois and Le Goix, 2000). It can therefore be seen that the spatial structures of cities have become more complex, involving in particular new patterns of movement from outskirts to outskirts, but that, up until now, they have not eliminated centre-periphery patterns.

As a result of a greater spreading out in residences than in jobs, commuting length has been increasing. Since 1975, the average distance between the home and the workplace has multiplied by two (in 1999 it was 15km for workers who did not work in their residential commune). Trip times have remained relatively stable, spent about 30 minutes per trip. This is explained by an increase in trip speeds, which rose in cities from 26 to 31km per hour between 1982 and 1994 (Orfeuil, 2001). This increase, linked to the intensive use of the private car and the improvement in transportation routes, is especially felt in outlying zones (from 40 to 43km per hour from suburbs to outskirts and from 22 to 29km per hour from outskirts to outskirts), but it remains stable for trips made in city centres. INSEE showed that for France as a whole an average door-to-door trip in a private car took 16 minutes as against 36 minutes in public transportation.

Interpreting Recent Trends

The process of urban sprawl and reduction in population density at the local level began in 1968 for Paris, and from 1975 on for the other French cities, which then saw their outlying areas grow twice as rapidly as before. The awareness of peri-urbanization was delayed by the lack of an appropriate definition when it first appeared. Bauer and Roux's study (1976) and the Mayoux Report (1979) had already warned of the magnitude of the phenomenon, but it was the results of the Census of 1982 that provided a more complete picture. 'Renaissance des communes rurales ou nouvelle forme d'urbanisation?' (Boudoul and Faur, 1982). Population change in many cities between 1975 and 1982 could be interpreted as a break in the process of urbanization, marking a renewal of rural communes and perhaps the 'end of the cities' (Chombart de Lauwe, 1982). The higher rate of growth of small towns in this period, the decline of the central population densities in most urban *agglomérations*, as well as migration from city centres towards rural communes, were often explained as 'counter-urbanization' (Berry, 1976; Champion, 1989).

Others offered a different interpretation, however, supported by a longer-term analysis of the evolution of the spatial distribution of urban growth (Pumain, 1982 and 1983). According to this view, the time-honoured process of the concentration of population in cities at the national level continued during the whole of this period (confirmation of this theory came in the Censuses of the 1990s, which attested in particular to a return of metropolitan growth). In addition, the process of urban sprawl at the local level marked a reversal in the tendency towards increased density (a reversal that had been begun almost two centuries earlier in the central quarters of the largest cities). However, it can also be interpreted as an expansion of the cities into accessible space enlarged by the use of the

automobile, but relatively stable in distance-time (Bretagnolle, Paulus and Pumain, 2001). This tendency seems likely to continue, but at what rate?

At the level of the *aires urbaines*, the deconcentration of population from the city centres and suburbs towards the peri-urban zones will probably continue. The differences in demographic evolution of the city centre, the suburbs and the peri-urban ring that were observed between 1990 and 1999 definitely confirm the continuation of the tendency for population to become spaced out in city centres: the farther one goes from the centre, the greater the average demographic growth ([Table 9.3](#)). The increase in the activity of women, and as a result the number of two-job households contributes to an increase in the flow of inter-communal home-to-work travel. If present trends in urban mobility continue, the number of kilometres by automobile in French city-suburbs units could increase by 30 per cent between now and 2010 (GART, 2001).

A comparison with the evolution of mobility in North America leads nevertheless to some more nuanced conclusions. While the rate of motorization was already very high in North America in 1960, mobility progressed relatively little there between 1960 and 1990; it ‘only’ doubled, at a time when it was almost multiplied by three in Europe. By analogy, we might expect that the evolution in the rate of motorization and the use of the car in France could be much slower than in the past. This being said, mobility continues to increase significantly in the United States, at a time when it remains much more motorized than European countries. In addition, there is still an important reservoir of non-motorized population among older people, women, and especially the young (Orfeuil, 2000).

One of the principal determinants of urban mobility in the future is the greater role of outskirts-to-outskirts trips. The growing difficulty in managing these trips is increased, furthermore, by the impact of the law establishing the 35-hour workweek. Public transportation, conceived for mass movement in dense zones, is not well adapted to the spatial and temporal scattering of urban mobility.

However, although the process of peri-urbanization continued in the 1990s, the results of the last Census showed clearly that the slowing in this process, detected in 1990, was being confirmed. This contraction in the rhythm of urban sprawl is not unrelated to the fall in French population growth. It can also be partly explained by a demographic revival in city centres. The relative recovery of some city centres had been noted in 1990, but became even more apparent in 1999, because the great majority of central communes ceased to lose inhabitants between 1990 and 1999.

Nevertheless, it is not enough merely to extend these quantitative tendencies to determine the future contours of urban sprawl. The factors that explain this movement have been modified because of the change in social and political contexts and analyses of the consequences of urban distribution. These transformations must be taken into account if we are to make a correct assessment of the potential future.

The Influence of Public Policy

In the majority of developed countries, urban sprawl was brought in by a wave of economic expansion and a consequent increase in the purchasing power of households. It also reflects the expansion of daily accessible space linked to the increase in automobile use. In this sense, the appearance of the process in France corresponds to its stage in the postwar movement of urbanization and modernization, that started as a spatial diffusion in Northern Europe eventually taking hold in Southern Europe. The intensity of the process in France (a theory that remains to be proven) should nevertheless be explained by local conditions. The reduction in densities, resulting in lower property values and a greater availability of space, is a major factor. The effect of public policies associated with these trends is another plausible explanation.

Single-Family Homes and Housing Policy

State policies designed to solve the problem of housing shortages in the context of post-war reconstruction and the succeeding phase of unprecedented demographic growth (baby boom, massive rural exodus, and then at the start of the 1960s, the reintegration of two million people from Algeria), were initially expressed in the building of large collective structures, between 1950 and 1970, favoured by the institution in 1958 of the *Zones d'Urbanisation Prioritaires* (ZUP). The marked preference for owning single-family homes, the rejection of large apartment complexes by the middle classes, and the changes in family composition (all from the late 1960s) inspired the first waves of building single-family housing estates. Motivations offered as reasons for moving are related to housing conditions (e.g. surface space, cost, the desire to change from renting to ownership, and from multiple to single-family housing) rather than to a search for a rural environment (Orfeuil, 2000).

These 'spontaneous' tendencies were certainly increased by national policies. The Real Estate Law of 1967, with the ZAC procedure (*Zone d'Aménagement Concerté-Collaborative Development Zone*) increased flexibility for the establishment of housing estates with single-family homes. In particular, it was the law of 1977 on the financing of public housing, substituting for 'aid towards stones' and 'aid to persons' by guaranteeing loans for the acquisition of property for low-income households, that promoted the spatial extension of cities. Thus, in the early 1980s, 40 per cent of new construction was destined for households benefiting from assistance.

From 'All Cars' to Public Transportation

Although the evolution of mobility has been comparable to the development observed in other European countries, the French State has been particularly active in the construction of infrastructure favourable to the car. In the period from 1960 to 1970, the dominant policy was to adapt the city to the car. These years were therefore also marked by the significant size of investments in motorways and expressways intended to open up territory at different levels. The length of the motorway network multiplied by 2.5 between 1975 and 1990 (from 2,700km to 6,800km), chiefly influenced by a policy aimed towards

'catching up'. The great inter-city motorway networks followed the logic of a national settlement pattern that favoured inter-city automobile traffic, with roads often set up as close as possible to towns or villages, if not passing through them. Some expressways opened up vast spaces to peri-urbanization, such Route Nationale 20 to the south of Paris, along which housing estates stretched to the south of Essonne, from Arpajon to Montlérty.

However, beginning in the 1970s, several cities came up with the idea of resisting the invasion of the automobile via a widespread use of pedestrian zones, and the introduction of bus lanes in public transportation. This succeeded in slowing down the growth of intra-urban traffic. But during the same period, the appearance of ring roads (beltways) to 'protect the city' and parking facilities for employees contributed to a considerable increase in urban sprawl.

Attempts at Regulation

Considered overall, the authorities have not elaborated a policy for or against urban sprawl. However, many institutional arrangements have converged towards, and even encouraged, urban sprawl, via *laissez faire*. The multiplicity of different agencies (Commune, State, Public Establishments of Inter-community Cooperation), objectives, perimeters, time frames for planning and implementation, have led to an often fragmented approach to the spatial development of cities. For a long time, the absence of a single professional tax has led communes to compete for business, and encouraged more urbanization (Sueur, 1999). Unlike practices in Germany, England and the Netherlands, urban and transportation policies are relatively independent in France; there are few transportation constraints on the location of most activities.

Nevertheless, an intention to control urban sprawl has been expressed in two special areas: a program of urbanism on a grand scale, especially the new towns in the Paris region, a series of *lois-cadres*, environmental strategies, urban transportation policies, and regulations on commercial facilities.

Via the new towns policy, the State has encouraged the control of the spread of Paris and its suburbs. Included in the planning scheme for the development of the Paris region of 1965 (but adopted later than in other European cities), this policy led to the creation of five new towns located near the Paris *agglomeration*, at least 30km from the centre of the capital, without creating a green belt. By participating in this ambitious project, the State made a strategic choice to implement urban polycentrism. This choice was motivated by 'a restrictive discourse to counter the environment of the housing estate', with the intention of 'counteracting the radio-concentric tendencies of spontaneous urban development' (Pumain, 1997), reinforced by a densification strategy. From this perspective, the new towns contributed in part to the expansion of the city of Paris and its suburbs. Since 1975, they have absorbed more than one-half of the demographic growth in Paris, and have acquired commercial facilities and created at least four poles in the surrounding suburbs. They have not however significantly limited the urbanization of green spaces. The *Zones Nature lies d 'Equilibre* (Zones of Natural Stability) in Ile-de-France were intended to create buffer zones in the space between the five new towns, to protect agriculture and

forests, but in the absence of legal directives and specific regulations (in particular, a directive cannot be used as evidence against a third party), their impact has remained limited.

Different types of *lois-cadres* have contributed directly or indirectly to controlling urban sprawl. In encouraging the protection of space vulnerable to the spatial extension of cities, several laws voted in 1985 provided specific procedures for protecting environmental zones and other sensitive zones such as coastal regions and mountains. In addition, the *plans de déplacements urbains* (PDU) were set up to implement urban transportation policies less favourable to the automobile and more respectful of the urban environment. Created in 1983, they served primarily to cover public transportation projects in city centres, without a close link to land development and planning schemes. Laws governing high-volume services, often associated with moves to the outskirts of cities, are another aspect of these *lois-cadres*. They were first designed to protect existing businesses (the Royer law), and then in the early 1990s directed also towards organizing commerce in the urban periphery (the Raffarin law) by attracting more services.

In spite of these arrangements, after the passage of the 1982–1983 decentralization laws,¹ the major task of controlling urbanization, via building permits, became the prerogative of the local communes. In the end, it is the mayors that make decisions about real estate development.

A New Institutional Order for Regulating Urban Sprawl

In the space of two years (1999 and 2000), the passage of two laws on intercommunality and the adoption of the law on ‘Solidarity and Urban Renewal’ has revamped the institutional framework for the government of cities. In reinforcing the intercommunal level and raising the control of peripheral urbanization to become the major objective of urban ‘renewal’, this new legislative system is moving in the direction of a more coherent and more efficient management of urban sprawl at the *agglomeration* level.

From ‘Communal Explosion’ to Communities of City and Suburbs, and Urban Communities (1999)

The laws known as the Vœuf² (26 June 1999) and Chevènement³ (12 July 1999) laws have strengthened the emergence of an authority for *agglomérations* in going further than previous efforts towards supra-communal management. They have developed the means, competence and fiscal resources necessary for putting into place an integrated strategy of development.

Two new structures were created by the law of 12 July 1999: les *communautés d’agglomération* and the *communautés urbaines*. The *communautés d’agglomération*, which replace the districts and communities of communes, form a group of communes in single block, with at least 50,000 inhabitants around a city centre of more than 15,000 inhabitants. The *communautés urbaines* are reserved for the largest cities, and must

include at least 500,000 inhabitants. Since the end of 1999, fifty *communautés d'agglomération* and two *communautés urbaines* have been created, and thirty more *communautés d'agglomération* are planned.

Among the powers attributed to these structures, several such as the development of space, transportation management and the habitat are directly linked to the question of urban sprawl and its regulation. The principal innovations brought in by this law are found in the creation of two financial levers: the adoption of a uniform professional tax and an overall fiscal allocation. In addition, the *communautés d'agglomération* and the *communautés urbaines* are the principal representatives and beneficiaries of State-region planning contracts. These contracts are defined within the framework of the *agglomération* projects encouraged by the law of 25 June 1999. The creation of communities, projects and contracts for *agglomérations* could help to ratify the recognition of the level of the *agglomération* as a territory of consultation, management and decision.

The Solidarity and Urban Renewal Law and the Limitation of Peri-Urbanisation

The SRU law, adopted in December 2000, which is part of the general struggle against urban explosion, and the implementation of housing rights, extends the spirit of this legislative operation by encouraging more intercommunal coordination. More specifically, it also declares that one of its objectives is to limit peri-urbanization.

Modifications Relating to Urbanism

Adjustments have been planned to modify the urban plans established by the real estate law of 1967. The Local Plan for Urbanism (PLU) will replace the POS at the communal level at the time of its revision. In the spirit of the SRU law, the integration of new measures should enable the communes to promote urban renewal (to ‘reconstruct the city on the city’) and to control peripheral extension. For example, taxes to exceed maximum density ceilings have been eliminated to discourage urban redevelopment projects. In addition, valuations used to compute local taxes for facilities have been corrected to promote the construction of multiple-family housing.

The Scheme for Territorial Coherence (SCOT) is replacing the *Schema Directeur* (Guiding Scheme). Like the Guiding Schemes, the Schemes for Territorial Coherence will provide specifications at the level of the *agglomération* for overall objectives for development and urbanism, taking into account policies for the habitat, leisure activities, services and infrastructure. They are distinguished from the Guiding Schemes by their more constraining character. Indeed, in the absence of a SCOT, the future urbanization zones for the communes defined in the local plan could not be urbanized. Within this framework, the communes would have less freedom to urbanize.

The Integration of Urban Policies

The SRU law aims to make urban policies more coherent with each other. This objective is achieved in part through the Scheme of Territorial Coherence, which, more than the Guiding Schemes, requires local professional bodies to agree on urban projects. Although transportation and its coordination with urban planning are the extension for which the SRU law grants the greatest means, in a more general way the law also encourages more coherence in local urban policies about the habitat, urban planning, economic development and commercial siting. In the same way, the *Plans de Déplacements Urbains*, the Local Habitat Programs and Schemes for Commercial Development need to be compatible with these other laws, and not just take them into account, as was the case with the POSs.

If policies for limiting the role of the automobile in the city are less repressive in France than in other countries, for example in Italy (Fouchier, 1998), France remains the country of the European Union which, in both the long and the short term, is expecting more from investments in public transportation policy. There-launching of the *Plans de Déplacements Urbains* (Transport Planning within the Cities; PDU) is emerging as a driving force in the policy of limiting automobile use in cities.

The Plans de Déplacements Urbains

The *Plans de Déplacement Urbains* are the key plans for regulating urban sprawl in France, with their objective reducing automobile use (*Loi sur l'air*, 1996) (Clean Air Law). This objective is pursued through a whole arsenal of policy instruments, including the development of public transportation, the search for less polluting means of transportation, improvements in the road network, parking strategies, the reduction of the impacts of freight deliveries, and efforts to promote commuting by public transport and carpools.

The *Plans de Déplacements Urbains* were created in 1983, but it was the *Loi sur l'air* of 1996 that gave them a ‘second wind’ in making them obligatory for *agglomérations* of more than 100,000 inhabitants. In addition, the law specifies that the POSs and the ZACs should take into account ‘the orientations of the PDUs’ at the time of the revision of the POSs. Furthermore, the SRU law gives validity to the PDUs by encouraging the coherent mutual development of transport and urban planning policies. In this law, the PDUs are described as the ‘transportation extension’ of the Scheme of Territorial Coherence. By the end of April 2001, in the 58 *agglomérations* with more than 100,000 inhabitants, 45 had completed PDUs (GART, 2001). Most were aiming for a decline in the modal share of automobiles, with Lyon counting on a decline of 3 per cent by 2005 and Toulouse hoping for a 5 per cent decline by 2008.

Public Transportation at the Local Level

To offer alternatives to the automobile and to reduce traffic congestion are the primary arguments for the development of local public transportation. The investments by municipalities and regions are substantial, about they have been 10 billion Euros between now and 2010 (GART, 2001). In the next few years, two-thirds of the budget of the Ile-de-

France region will go to public transportation. The reappearance of urban tramways is one of the most spectacular consequences of this policy: Saint-Etienne had preserved its tramways, Nantes and Grenoble were among the first to reintroduce them in 1985 and 1987, and since then Rouen, Strasbourg, Saint-Denis, Montpellier and Orléans, on the other hand, have all opened new lines. Lyon and Marseille have chosen the metro, while Lille, Toulouse and Rennes have opted for VAL. Many other projects are under construction (Beaucire and Lebreton, 2000). Added to these expensive measures, which are reserved for the most densely-populated cities, but appreciated by the public for their contribution to the protection of the environment and the quality of life in the city, are other solutions, such as solo bus lanes and more flexible systems using new communication technology to serve sparsely populated peripheral areas. In 1998, almost all PDUs considered the promotion of public transportation to be a planning priority (GART, 2001).

Parking and Urban Tollbooths

Since 1967, the *Plans d'Occupation des Sols* (Plans for Land Use) have included prescriptions determining the minimal norms for parking places in new areas of construction. With the *Loi sur l'air* (1996), urban parking principles are important and remain a key element in transport policies, despite their neglect in the *Plans de Déplacements Urbains* with their emphasis on public transportation in general and tramways in particular (GART, 2001). Recently, the SRU law contributed to strengthening parking controls, changing the *Plans Locaux d'Urbanisme* (Local Plans for Urbanism) by replacing the minimal norms for parking places established in 1967 with maximum norms. It also encourages the practice of positive discrimination among drivers (favouring residents, dissuading commuters), and encourages businesses to promote commuting by means other than the automobile. In addition, the provisions of the SRU law are more specific than the *Loi sur l'air* (the Clean Air Law) about the management of public parking and the norms of private parking (in particular, for goods delivery).

The establishment of urban tolls is a more restrictive instrument for regulating travel behaviour than parking actions, but it is also a possible source of financing to meet transportation investment needs. The experience of four metropolises (Marseille, Toulouse, Paris and Lyon) has demonstrated the conditions under which this solution is acceptable to the public. Tolls on *new* infrastructure have not raised major opposition when introduced transparently. In Marseille, the Prado-Carénage Tunnel, the first intra-urban toll project which was opened in 1993, crosses the city to link two motorways. In Paris, the tolls on the A14, which links the business quarter of La Défense to Orgeval (Normandy) has been accepted in spite of its high cost (5.6 euros), and remains free for those who carpool on workdays. In Lyon, the toll on the northern section of the ring road (ex-TEO) was only accepted after a boycott that led to a toll reduction. On the other hand, the establishment of tollbooths on an older road in the southern suburbs of Toulouse ended in failure and free use was restored.

Discussions have also begun about the more widespread use of tolls (i.e. not restricted to new roads) on connector roads or expressway networks. However, for the time being,

French law only permits tolls on new roads.

Conclusions

The process of urban sprawl is tied to the continuing question of the core city in European Union countries. Sustainable development remains a vague and very general concept which, when applied to cities, raises issues about economic efficiency (e.g. relating to productive capital, infrastructure and technology), ecological performance (e.g. natural resources, biological equilibrium) and social development (e.g. culture, institutions, values). The system is so complex that we should refrain from recommending any policy without comparative analyses (Bertuglia *et al.*, 1998).

The spatial extension of cities into neighboring rural spaces is a key characteristic of the urbanization of the last thirty years. Global in scope (Dureau *et al.*, 2000), this process is linked to the rapid spread of technologies, in particular those related to individual means of transportation, often associated with the rise in living standards and economic and cultural globalization. Although the effects of urban dispersion were felt earlier, beginning in the 1950s in North America, it would be too simplistic to explain this new way of building cities and organizing urban life by adopting a morphological model and an urban lifestyle that originated in the United States. Several urban traditions coexist in the world, each one with a different way of reacting to the adoption of such innovations. The European model of urbanization constitutes an alternative to the American model. This is not only a matter of path dependency in a complex evolution but also of persistent differences in the values of key parameters. These include residential mobility, commuting, the speed of intra-urban circulation, sales taxes, urban planning regulations, the size of administrative units, cultural values and attitudes towards urbanization.

In this respect, analysis of the French case calls for caution. The state of our knowledge of the subject is still in its early stages. Systems for measuring the spatial extension of cities have recently been improved, and now make it possible to observe the morphological characteristics of urban sprawl over a period of fifty years. Nevertheless, because of the lack of sufficiently comparable concepts and statistical definitions for European cities (Cattan *et al.*, 1994; Pumain and Saint-Julien, 1996), it remains difficult to compare the French case with other European countries. At the very least, we can advance the idea that urban sprawl developed later in France than in the countries of Northern Europe, but earlier than in Spain and Italy. Furthermore, the spatial extension of cities should be considered in the context of national average densities and the principles of real estate development..

The fact that this chronology deals with a process of spatial distribution leads to the idea that these same demographic, sociological and economic transformations could account for the spatial expansion of the cities from one country to another. An attentive reading of the interpretations given in the literature shows, however, that several factors specific to French society and territory interfere with this general process, and are in considerable measure responsible for a unique style of peri-urbanization. Beyond a marked

preference for a detached house (associated with France's recent rural past), the intervention of the State via a housing policy that has favoured new construction has strongly influenced the growth of the peri-urban fringes. Nevertheless, France brings together two features that elsewhere would involve a paradox: in comparison with Northern Europe cities, the use of the private automobile has been encouraged in France but city centres have continued to be strongly promoted. For some time, even before the concept of the sustainable city emerged, they have been the object of protection and renovation, and other measures that continue to attract population and promote economic activity. In addition, the French case indicates some success despite a modest degree of State intervention, fragmented political decisions at the local level, and a relatively lax planning system.

However, there remains no consensus in France about urban sprawl. The consequences of this process have been assessed in very different ways among researchers (Chalas, 2001), and remain the subject of debate.

¹ Before these laws existed, building permits were delivered by the Préfecture of the department, the authority representing the State at the local level.

² Loi d'Orientation sur l'Aménagement et le Développement Durable du Territoire (L.O.A.D.D.T.).

³ Loi de simplification et de modernisation administrative du territoire français.

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Chapter 10

Concentration and Dispersal of Employment in French Cities

Jean-Marie Huriot

Introduction

For 30 years now cities, and above all metropolises, have been growing in size and in economic importance. Their role as nodes of economic decision and coordination functions has become far greater, in line with both the transformations in the processes and structure of production (marked by the rise of services and especially of high-order services) and the emergence of new technologies (particularly information and communication technologies). These economic and technological changes are bringing about new patterns of urban space. Urban sprawl, which began with ‘sudden urban growth’ (Papageorgiou, 1990) in the 19th century, is pushing out the limits of the city still further. Population, and more recently employment, are spreading outward and increasing more in the periphery than in the centre. Beyond the expanding suburbs there appeared a new form of outer urban development, namely ‘periurbanization’.¹ But urban sprawl, and especially the deconcentration of economic activity, is far from uniform. It takes the form of peripheral poles. A large proportion of employment growth in the periphery is becoming concentrated in a small number of activity poles. Thus, the reshaping of cities is a twofold process combining urban extension and multipolarization (Boiteux-Orain and Huriot, 2002)

However, the form of urban sprawl varies with the period, the country and even the city concerned. Urban sprawl is a historical, sequential and cumulative process. It is time- and space-dependent. It is also differentiated by activities and affects industry, retailing and services in different ways. Even different services may engage in different decentralization behaviour.

Urban sprawl is a prominent feature in the United States. Almost 80 per cent of the population lives in cities but only about 30 per cent in city centres. The suburbanization of employment leads to the well known phenomenon of edge cities (Garreau, 1991) or suburban downtowns (Craig and Kohlhase, 1999). These new centres replicate the old one and they are in competition with it. It is worth asking to what extent the American trends of urban growth are replicated in other developed countries or foreshadow their future evolution.

In recent years, several studies have dealt with the French case. The forms of urban spatial change have been analyzed and more or less explicitly compared with American trends.² Some of these analyses deal with all cities over a certain size while the others propose detailed studies of particular cities. For example, there are interesting analyses of urban change in Paris and its more or less close periphery, in Lyon, in Bordeaux and in Dijon.³ From these works, including our own studies, we can establish that French cities follow a series of original trends which are significantly different from those in the US.

In order to characterize this French style, let us define two ‘pure’ models of urban structure. The first is the well-known monocentric model. Employment is concentrated entirely in a single centre while households live in the periphery. The New Urban Economics has given a complete and thorough analysis of this case (Richardson, 1977, Fujita, 1989, Papageorgiou, 1990). It was the pattern found in most US and European cities from the industrial revolution until the 1960s. It has

inspired many planned or utopian cities (Baumont and Huriot, 1997). The second model is the elementary multicentric model, where employment is concentrated in a few clusters of variable size but always of uniform composition. In such a model every employment pole contains all activities and all the poles are functionally identical, so that they are in competition for employment and for economic functions. This case is trivially represented by the basic models of city formation proposed by economics of agglomeration (Fujita and Ogawa, 1982; Imai, 1982; Huriot and Thisse, 2000; Fujita and Thisse, 2002), where only one production sector is considered, so that all employment clusters are necessarily identical. It corresponds closely to Garreau's Edge City concept. Edge Cities 'contain all the functions a city ever has' (Garreau, 1991, 4). Despite the claim that they represent the future of every American city and even that 'they are being copied all over the world' (Garreau, 1991, 25), they are not a universal model, even in the United States. Of course, these pure models never exist precisely in reality. Every city lies somewhere along a continuum between them. But some cities lie toward the monocentric pattern while others lie closer to the multicentric model. French cities are in the middle of the range.

The French style of urban development is an original combination of the monocentric model and a variation on the multicentric pattern. I suggest calling this 'specialized multipolar,' hence I propose the 'Monocentric Specialized Multipolar' (MSM) hypothesis. This is akin to the idea of the 'mono-multicentric' form of Parisian urban sprawl highlighted in a comparison between Paris, Montreal and Toronto (Huriot *et al.*, 2003) as well as to the 'multimonocentric' model suggested by Aguiléra-Bélanger (2001).

Three sets of arguments support this hypothesis and will be developed in this chapter. First, population conforms to the general tendency to sprawl, but the latest census data show the possible onset of a reverse movement. Second, multiple employment poles are clearly identified in most cities, which supports the multipolar dimension of the MSM hypothesis. Third, these poles are specialized and complementary; their specializations depend on the distance to the centre and they are not fully autonomous; the city centre generally remains the most specialized place for strategic 'metropolitan' activities, which supports the monocentric aspect of the MSM model.

These arguments will be illustrated mainly by the case of the Paris Region, Ile-de-France, but also with the cases of Lyon, Bordeaux, and Dijon.

Population Sprawl: Going Out and Back

Some general remarks on the trend of French urban population growth lay the foundations for the subsequent analysis, which first evaluates urban sprawl and second points out what could appear as a slowing down or even a reversal of this movement.

The French urban population can be defined either in terms of 'urban units' on the basis of contiguous housing, or in terms of 'urban areas', based on the polarization of employment. The urban area is composed of the 'urban agglomeration' and the 'urban fringe'. The urban agglomeration comprises the 'suburb' and the 'city centre' (see the Appendix for these definitions). The subsequent analyses will generally refer to urban areas, except in the special case of Paris, for which the scale is extended to the region Ile-de-France, and in the study on Dijon, which relates to the urban community.

General Trends

First of all, let us have a look at the general features of the French city system. The French urban network is less dense than in other European countries. The difference is particularly marked with

North Europe. However, the urban network is much denser than in North America⁴ (Moriconi-Ebrard, 1993; Pumain *et al.*, 1996). Probably because of late urbanization in France (compared with Germany and England,⁵ Burgel, 2001), the proportion of the population living in medium-sized and large cities was still lower than elsewhere in Europe in 1990.

In France as in other European countries, the city system displays strong long-term stability. This has been emphasized by historians such as Bairoch (1985), Hohenberg and Lees (1985) for Europe and by Aghulon *et al.* (1998) for 19th century France. The largest cities are the most stable, and the phenomenon is more pronounced in France than in England or in Germany. More concentration in what are already the most developed cities seems the rule. This results in more spatial inequalities. This is confirmed by the most recent data. The evolution of cities between the last two censuses gives some valuable indications (INSEE, 1999 population census).

In 1999, 77 per cent of the total population lived in urban areas (compared with 73 per cent in 1990). The Paris urban area clearly dominates the hierarchy of cities with 11.2 million inhabitants in 1999, *i.e.* 6.8 times the population of the second urban area, Lyon (Julien, 2001). This is the highest primacy ratio in Europe, regardless of city definitions. Primacy, combined with political centralization and the feeble power of local communities, contributes largely to the specificity of the French style (Marconis, 2002). Paris remains the largest European agglomeration, ahead of London, the Ruhr and Madrid.

One of the most striking features is the increasing concentration of population in large cities. This is a trend observed since the 1960s. Eleven urban areas making up 34 per cent of the French population in 1990 accounted for one-half of French population growth from 1990 to 1999. Sixteen urban areas over 150,000 inhabitants grew twice as fast as the total population (Julien, 2001). In this process, the provincial cities grew faster than Paris where a slight slowing down occurred. Consequently, the French urban system is a little more evenly balanced than in the 1960s.

The total growth of population in urban areas is partly because of population growth in urban areas within their 1990 boundaries and partly because of the extension of urban areas to new communes as a result of urban sprawl. Urban areas became more extensive and increased their surface area by one-third between 1990 and 1999 (Julien, 2001). This urban sprawl will now be analyzed more thoroughly.

Urban Sprawl in French cities

Overview

Since Clark (1951), it has been standard practice to represent urban population density as a negative exponential function of the distance to the centre: $d(x) = d_0 e^{-yx}$, where $d(x)$ is the density at distance x from the centre, d_0 is the density at the centre and y is the density gradient, which measures the rate of decrease of density with distance. Many improvements have made the formula more complex and more accurate (Péguy, 2002). However, the Clark function yields sufficient information to characterize the phenomenon. It has been estimated for 123 urban areas (including Paris) and for the censuses of 1975, 1982, 1990 and 1999 (Péguy, 2000, 2002). According to this study, the average density gradient was 1.5 per cent lower in 1999 (0.1403) than in 1975⁶ (0.1424), which indicates that urban areas have extended. Indeed, from 1975 to 1990, many city centres lost population in relative or absolute terms to the advantage of the suburbs (Léo and Philippe, 1998).

However, this average evolution masks wide disparities between cities: the extreme values of the estimated gradients were 0.043 and 0.473 in 1999. The level and the evolution of the gradient are

related to city size. The gradient tends to decrease as city size increases, but not regularly. Cities of between 150,000 and 300,000 inhabitants and of over 500,000 have the weakest gradients. Among the largest urban areas, Paris, Lyon and Toulouse are the most dispersed, Nice, Nantes and Lille are relatively concentrated.

Two observations reinforce these general trends of declining gradients. First, the average population density in cities continued the decline observed at least since the mid-20th century (Berroir, 1996, Burgel, 2001). This means that the spatial extension of cities was much greater than their population growth. The Toulouse urban area is a good example: from 1990 to 1999, its population increased by 14.7 per cent (the second highest growth rate among urban areas of more than 400,000 inhabitants) while the number of communes in the urban area increased by 34 per cent (Marconis, 2002).

Table 10.1 The growth of the urban fringe in France

	Average annual growth rate on the urban fringe (%)	1975–1982	1982– 1990	1990– 1999
In urban areas over 100,000*	2.85		2.05	1.19
In all urban areas**	2.71		1.89	1.03

Source: *Bessy-Pietri (2000), limits of urban areas in 1990.

**Schmitt *et al.* (2002), limits of urban areas in 1990.

Second, in the period 1962–1999, population grew more than 7 times faster in urban fringes than in urban agglomérations (Orfeuil, 2000). This gives an idea of the importance of the French movement of periurbanization, *i.e.* urbanization of rural space beyond the suburbs on the urban fringe. During the 1970s, city centres declined as population moved to the urban fringes rather than to the suburbs: the fastest growth of these rings was observed between the censuses of 1975 and 1982 (Table 10.1). This was the period of the most significant population sprawl in France (Le Jeannie, 1997; Choffel, 2000). The growth rate of urban fringes is higher in large cities (compare in Table 10.1 the average growth rates for urban areas of more than 100,000 inhabitants with the annual rates of growth of all the urban fringe).

Population Redistribution around Paris

The city of Paris had its largest population around 1920 with 2.9 million inhabitants. In 2000 this figure was only 2.1 million. The maximum loss occurred between 1960 and 1975. This movement has slowed down, especially in very recent years. The inner ring (*petite couronne*: departments adjacent to the City of Paris) witnessed an opposite trend: substantial growth between 1960 and 1975 and then stabilization because of the lack of available land. In the past 40 years, the outer ring (*grande couronne*: the most remote departments of Ile-de-France) has more than doubled in population, more than half of this growth being due to the *villes nouvelles* in the last 25 years (IAURIF, 2001; Table 10.2).

Another measure of this centrifugal movement, on the smaller scale of the Paris urban area, is the reduction in the estimated density gradient from 0.093 in 1975 to 0.086 in 1999 (Péguy, 2000).

Table 10.2 Spatial distribution of population in the Ile-de-France, 1960–2000

	Paris	Inner ring	Outer ring	Total
Population 1960, millions (%)	2.8 (34.2)	3.3 (40.2)	2.1 (25.6)	8.2 (100.0)
Population 2000, millions (%)	2.1 (19.3)	4.0 (36.7)	4.8 (44.0)	10.9 (100.0)
Change, 1960–2000	-25%	+21%	+129%	+33%

Source: IAURIF (2001).

Coming Back to the Centre?

Since 1975, population has not stopped growing either in urban agglomérations or on the urban fringe, although the growth rate has been much higher on the urban fringe (Schmitt *et al.*, 2002). But within urban agglomérations, a new trend has appeared. During the 1990s, for the first time since 1975, population growth was much stronger in the suburbs than in the city centres (Chavouet and Fanouillet, 2000; see Appendix for definitions). The phenomenon was obvious in large cities and especially in Paris. In the 73 urban areas with more than 100,000 inhabitants, urban sprawl was less marked between 1990 and 1999 than in the preceding inter-census periods (Bessy-Pietri, 2000). Table 10.3 shows evidence of the recent reversal; city centres are no longer in decline while both the suburbs and the urban fringe are growing more slowly.

Once again, these trends hide substantial disparities between cities although they show the tendency for high-income households to return to the city centre, spurred by specialization in high-level services and the upgrading of core city housing.

Table 10.3 Population sprawl in France, 1975–1999

	Average annual growth rate (%)*		
	1975–1982	1982–1990	1990–1999
City centres	-0.64	-0.17	0.15
Suburbs	0.83	0.84	0.41
Urban fringe	2.85	2.05	1.19
Total	0.51	0.65	0.44

* 73 urban areas over 100,000 inhabitants, urban area boundaries as of 1990.

Source: Bessy-Pietri (2000)

Periurbanization has been slowing down since the beginning of the 1980s after the peak of the 1970s. In 1999, about 60 per cent of the total French population lived in urban agglomérations and 13 per cent on the urban fringe.

The Social Dimensions of Urban Sprawl

It is well known that in North America, residents' income is generally higher in the periphery than in the city centre. It is less clear in France. On the one hand, for all French urban areas in 1996, average income was 14 per cent higher in the suburbs and the urban fringe than in the city centres (Choffel, 2000). This inequality increased between 1990 and 1996 ([Table 10.4](#)). On the other hand, the opposite is true in Paris: overall, incomes are lower in the suburbs than in the city of Paris: in 1990, the average income was 18,900 € in Paris and 16,160 € in Parisian suburbs (Nicot, 1996, quoted by Brueckner, Thisse et Zenou, 1999), but this gap has narrowed.

Table 10.4 Average incomes in French urban areas

	City centres	Suburbs	Urban fringe
1996 (Francs)	89,000	101,653	98,112
Change 90-96 (%)	5.88	8.11	11.7

Source: DGI (French revenue service) and Choffel (2000).

In Ile-de-France, the spatial segregation of social classes is becoming more pronounced. Higher income groups, and particularly the categories representing decision functions, are more and more concentrated in the west part of Paris and in the nearby west and south-west periphery (IAURIF, 2001). This is largely the result of a cumulative process relating the location of well-off population and high-order activities (see the analysis of employment poles in Ile-de-France below). High-tech industries and high-order services generally prefer to locate near high-skilled populations. In return, the presence of high-skilled jobs influences the residential location of executives, and this reinforces social segregation and place attraction. The lower income households leave the centre for the periphery and concentrate in old-established industrial poles and in peripheral high-density housing estates. According to IAURIF (2001), market mechanisms and the cumulative location process make the reversal of this segregation process increasingly improbable.

The Growth of Peripheral Employment Poles: the Multipolar Dimension

A general discussion of employment deconcentration is followed by an analysis of the main characteristics of multipolarization in French urban areas. The Paris Region is closely examined, and then compared with other cities.

From Employment Sprawl to Employment Poles

Estimates of employment density gradients in the 20 largest urban areas for 1975, 1982 and 1990 give significantly lower values than for population, which confirms the general feature that employment is less dispersed than population (Péguy, 2000).

The deconcentration of employment is more recent and less marked than the deconcentration of population, and it has a shorter spatial range until the rise of employment on the urban fringe. Indeed, two major features characterize changes of urban employment location in France: concentration in urban agglomérations and suburbanization within these urban agglomérations.

First, the long-term evolution of the spatial distribution of employment in urban areas supports the idea of the concentration of employment in urban agglomérations. From 1962 to 1975, and to a lesser extent until 1990, this concentration increased. Urban agglomérations accommodated 62 per cent of total French employment in 1962, and 71.5 per cent in 1990 (Le Jeannie, 1997). This evolution

corresponded to the specialization of urban agglomérations in employment (measured by the location quotient), increasing from 1.05 in 1962 to 1.14 in 1990, twice the urban fringe quotient. However, more recently (1990–1999) employment grew at a much higher rate in the urban fringe (16 per cent) than in urban agglomérations (2.4 per cent), as part of a trend beginning in the 1980s (Schmitt *et al.*, 2002). Consequently, the concentration of employment in urban agglomérations ceased to grow and even declined slightly (70.9 per cent in 1999).⁷

Second, employment distribution has changed within urban agglomérations. In general, employment grew faster in the suburbs than in city centres (Le Jeannie, 1997). The mobility of establishments between 1989 and 1992 confirms this trend (Delisle and Lainé, 1998). Centrifugal mobility was particularly marked within urban areas and increased with city size. Establishments left the city centres for the suburbs or the urban fringes. This deconcentration was clearly differentiated by economic sectors.

However, employment sprawl is far from uniform. Although their methods differ, all studies point to a clear identification of multipolar structures in provincial urban areas such as in the Ile-de-France. The suburbanization of economic activities not only follows a deconcentration process by which activities seek more space, lower land prices, less congestion and better buildings, but also obeys the logic of agglomeration economies. This leads to the formation of peripheral poles.

Employment Poles in France

Peripheral poles are identified in terms of private employment in suburbs of agglomérations exceeding 100,000 inhabitants in 1990 (Gaschet, 2001). The study looked at districts with more than 1500 workers and a 1995 employment/resident workers ratio exceeding 1.3 times⁸ the average ratio in the corresponding suburbs.

Using these criteria, 117 peripheral poles were identified in 50 urban areas. Only 10 urban areas had more than two peripheral poles. The highest number of poles identified, not surprisingly, was in Paris (26), Lyon (5), Lille (5) and Toulouse (4). Paris is clearly a special case. The poles were classified under five types by their economic specialization: industry, mixed industry and producer services, high-order services, diversified services, and personal services. This suggests substantial diversity among the poles and their differentiation from the city centre. Moreover, specializations of the peripheral poles are related to the size of their urban area. Industrial poles are over-represented in areas with fewer than 400,000 inhabitants and under-represented in the largest urban areas. On the contrary, poles specialized in high-order services or combining industry and high-order services are relatively more evident in the largest urban areas (more than 400,000 inhabitants).

Further interesting results relate the characteristics of the poles to the size of the urban areas:

- i. there is a positive correlation between the size of the city and the average size of peripheral poles;
- ii. the ratio of employment in peripheral poles to employment in the city centre increases with city size; and
- iii. peripheral poles are more distant from the city centre in larger urban areas.

However, contrary to generally accepted ideas, the rate of relative employment growth outside the city centre is not significantly related to city size (from 1976 to 1997, Gaschet, 2002).

Rings and Poles around Paris

The scale of Parisian sprawl means the phenomenon needs to be investigated on a large spatial scale, such as that of the Paris Region, Ile-de-France.

A First Glimpse

Ile-de-France makes up 19 per cent of the French population, accounts for 22 per cent of the French workforce, and produces 29 per cent of France's GDP. In other words, some 5 million workers produce a GDP nearly equal to that of the whole of Spain. One quarter of France's students and almost half of its research staff are based in the Ile-de-France.

From 1962 to 1998, Ile-de-France lost one-half of its industrial employment. However, it remains France's leading industrial region. Tertiary employment is over-represented, particularly in producer services which increased from 9 per cent of regional employment in 1978 to 17 per cent in 1997 (INSEE).

A first look at the deconcentration of employment in Paris examines the changing pattern of employment among Paris, the inner ring and the outer ring ([Table 10.5](#)).

Between 1978 and 1997, Paris lost 336,400 workers, while the inner ring gained 86,300 and the outer ring 415,000. This movement is similar to that of population but it is less marked. Despite this deconcentration, employment densities varied widely; employment is 110 times higher in Paris than in the outer ring ([Table 10.5](#)). However, this gives a somewhat inaccurate view of the location of employment, especially outside Paris, inasmuch as economic activity is highly concentrated in a few poles.

Table 10.5 Spatial distribution of employment in the Ile-de-France, 1978–1997

	Paris	Inner ring	Outer ring	Total
Employment change	-336,400 (-18%)	+86,300 (+5%)	+415,000 (+40%)	165,000 (+4%)
Employment 1978 (%)	41.14	35.54	23.32	100.00
Employment 1997 (%)	32.40	36.13	31.47	100.00
Density 1997 (employment/km ²)	14,270	2,250	129	

Source: INSEE and Boiteux-Orain and Guillain, 2002.

Poles in the Ile-de-France

The analysis of employment poles in the Ile-de-France is based (Boiteux-Orain and Huriot, 2001; Boiteux-Orain and Guillain, 2002) on the Regional Employment Survey (INSEE) for 1300 communes and districts (*arrondissements*).

A peripheral employment pole is defined as a commune or a set of contiguous communes, each with more than 7000 workers, and with a location quotient of employment⁹ greater than 1. In addition, the 'megapole' is composed of the 20 *arrondissements* of Paris and 14 communes of the inner ring. Obviously, this concentrates a huge mass of employment, but each of its components does not necessarily satisfy the criterion of the location quotient, because it is also very densely populated. Two kinds of *arrondissements* coexist in the city of Paris. The more central ones have a high employment location quotient and are relatively specialized in employment, while the more

peripheral ones have both a high level of employment and of population. It is related to the need for proximity and the centrality of high-order services which outbid residential land uses in the city core.

All the selected communes or *arrondissements* are arranged in three categories of poles determined by size criteria (Coffey and Shearmur, 2001), *i.e.* central poles (with at least one commune of more than 50,000 workers), primary poles (at least one commune of over 15,000 workers), and isolated poles (a single commune of more than 7,000 workers).

This method results in the identification of 34 poles comprising almost 70 per cent of the region's employment: 8 central poles, 14 primary poles and 12 isolated poles (Table 10.6).

Table 10.6 Distribution of employment among poles in the Ile-de-France, 1978–1997

	Central poles	Primary poles	Isolated poles	Total poles	Other
1978 (%)	50.23	20.18	2.72	73.12	26.88
1997 (%)	42.86	23.43	3.06	69.35	30.65

Source: INSEE (Regional Employment Survey 1997), and Boiteux-Orain and Guillain, 2002.

The location of these poles is strictly ordered spatially. Central poles are exclusively localized in the ‘megapole’, *i.e.* in Paris and in the very nearby western and south-western vicinity. Most primary poles are in the inner ring or very close to it. Isolated poles are all in the outer ring and make up a very small share of regional employment, even if they have the highest overall growth rate. Thus, the size of the poles is clearly ordered relative to their proximity to Paris.

Examining the poles in more detail shows that most of the greatest increases in employment took place in poles close to Paris in the west and southwest, in La Défense, Saint-Quentin-en-Yvelines, Cergy-Pontoise and Saclay-Orsay, *i.e.* in central poles or nearby primary poles.

This suggests that employment deconcentration mostly affects communes close to Paris. Primary poles include several communes each with more than 15,000 workers, while isolated poles are single communes. Each of the isolated poles has far fewer workers than the primary poles, and *many* fewer than the central poles. Economic activities tend to decentralize toward places already containing many jobs, *i.e.* where agglomeration economies are strong. Employment attracts employment, but agglomeration economies have a significant effect only above a threshold size of employment concentration (Boiteux-Orain and Huriot, 2001). Peripheral poles are not independent of the ‘megapole’ and benefit from the agglomeration economies it generates. This is preliminary evidence for the MSM hypothesis formulated in the introduction.

The rise of the peripheral poles results from the combination of two types of agglomeration economies: the first one holds sway at very short distances and explains the poles themselves; the second one works at greater distances and explains the position of the poles relative to Paris. This intuition is reinforced in the next section, after examining the economic composition of the different poles.

Employment outside the poles makes up nearly one-third of regional employment and is increasing significantly. There is a two-fold movement: polarized deconcentration in the primary poles and dispersion from the poles.

Finally, the poles are located along the main communication routes, confirming a universal observation (Anas *et al.*, 1998) while emphasizing the importance of the accessibility to the ‘megapole’ and the dependence upon Paris.

The Role of the *Villes Nouvelles* in Parisian Sprawl

Although urban growth results from agglomeration advantages, it also generates agglomeration disadvantages, such as increased commuting, high land rents, traffic congestion, and pollution. Beyond a certain size, the latter increase faster than the former. Then, it would be socially optimal to relocate population and activities to new urban poles.

As long as the private advantages of the central location remain higher than that of a new peripheral location, no one has the incentive to move and the city centre continues to grow beyond its optimal size. In this case, public intervention may be needed to create or increase agglomeration economies in a peripheral pole in order to make it more attractive (Henderson, 1974; Henderson and Mitra, 1996; Becker and Henderson, 2000). This may be done by building new towns, or by investing in transport and communication infrastructure (Helsley and Sullivan, 1991). Thus, urban planning can influence individual decisions on the deconcentration issue in reducing the differentials in agglomeration economies between the centre and the periphery.

The role of urban planning is different in France from North America (Boiteux-Orain and Huriot, 2002). In North America, urban development depends primarily on private decision making in a competitive environment. In the absence of strong urban policies, urban sprawl is barely controlled and often chaotic (Garreau, 1991; Davis, 1992). Public intervention is mainly limited to investment in infrastructure in response to private residential and commercial demand (Alvergne, 1999). Public policy is much more developed in France. Many efforts have been made to control the expansion of Paris and to obtain a more balanced urban system, for example, via the creation of *villes nouvelles* and decentralization policy. Have these efforts had any marked effect on urban sprawl?

The *villes nouvelles* were built in the 1970s around selected large cities to fight against the harmful effects of their growth and to promote deconcentration. Most of them are located near Paris in the Ile-de-France, partly in the outer ring: Melun-Sénart, Evry, Marne-la-Vallée, Cergy-Pontoise, and Saint-Quentin-en-Yvelines. The others are near Lyon (L'Isle d'Abeau), Rouen (Le Vaudreuil) and around the Etang de Berre, near Marseille.

Let us concentrate on the *villes nouvelles* around Paris. Although it is not strictly a *ville nouvelle*, the new business district of La Défense results from the political will to deconcentrate tertiary activities and to create a second CBD for Paris.

The *villes nouvelles* differ from the British new towns (Alvergne and Shearmur, 2003). French *villes nouvelles* were established nearer the city centre than the British new towns (respectively 30km and 70km). British new towns were conceived of as more autonomous than the *villes nouvelles*. The latter were connected to Paris by the development of the RER (express regional network). ‘This reflects an explicit hypothesis underlying the policy, namely the regional nature of Ile-de-France labour market’ (Alvergne and Shearmur, 2003). This could also be interpreted as a reflection of the French spirit of urban development, wavering between monocentricity and multipolarization.

The *villes nouvelles* were initially conceived of as population poles rather than as real urban poles. In 2000, the *villes nouvelles* had 740,000 inhabitants, one-half of the initial objective (IAURIF, 2001). Nevertheless, they attracted employment. They are globally well balanced in terms of population and employment, representing 6.8 per cent of regional population and 6.7 per cent of regional employment. However, along with La Défense, the *ville nouvelle* of Saint-Quentin-en-Yvelines is highly specialized in high-order activities, high tech industries and producer services (Boiteux-Orain and Guillain, 2002). La Défense pools a large variety of high-order services but constitutes a specialized expansion of the Parisian ‘macropole’ rather than the concept of an autonomous city.

An analysis of the development of the *villes nouvelles* compared with employment poles and with the whole of the Ile-de-France provides an evaluation of their driving role in the multipolarization of the Ile de France (Alvergne and Shearmur, 2003). Three arguments support the view that ‘policy matters’. First, except for Melun-Sénart, all the *villes nouvelles* emerged as employment poles around

1978 and expanded on these lines from 1978 to 1994. Second, in the same period, the *villes nouvelles* were the sole areas where the population share in the Ile-de-France increased. Third, the *villes nouvelles* had the highest growth rate of employment, and their total share in the Ile-de-France employment increased from 2.7 per cent in 1978 to 6.6 per cent in 1994 (since that date it has remained stable). This points to fast growth in what were rural communes in the 1960s.

However, the *villes nouvelles* strengthens the MSM model rather than the autonomous edge cities pattern. The first reason is the balance between population and employment. Most of these poles are not strongly specialized in employment. The second reason is found in their economic composition. Despite the fact that they have the fastest gains in FIRE (finance, insurance and real estate) and in producer services, they cannot compete with the ‘megapole’, because they have concentrated on lower-order services more than other zones. ‘Finally, it is apparent that the *villes nouvelles* are of a different nature to Garreau’s (1991) edge cities’ (Alvergne and Shearmur, 2003).

Employment Multipolarization in Provincial Cities

Three examples are examined: Lyon (Aguiléra-Bélanger, 2001; Aguiléra, 2002; Mignot, 1999), Bordeaux (Gaschet, 2000, 2001, 2002) and Dijon (Baumont and Bourdon, 2002). The results are similar to those of Paris, if on a smaller scale.

The Lyon urban area comprises 1.6 million inhabitants, one-third of whom live in the city centre (Lyon and Villeurbanne). Between 1982 and 1999, population grew faster in the city centre than in the rest of the urban agglomeration. During this period, however, the urban fringe grew at a much faster rate ([Table 10.7](#)).

For measuring the restructuring of economic space in Lyon, the data consists of the SIRENE list of establishments based on the 239 communes of the urban area. The change in the general pattern is reported in [Table 10.7](#).

The method differs from that used for the Ile-de-France. It is based on three criteria: above average density by zone, zones with more than 150 establishments, and an above average increase in the number of establishments by zone. Four peripheral poles are revealed, three of which are located in the urban agglomeration. The poles are small relative to the city centre, although they include 22.8 per cent of the peripheral establishments in 1999 (as opposed to 18.3 per cent in 1982). They represent clusters of population as well as of jobs (Aguiléra-Bélanger, 2001). As expected, they are located along important communication routes.

Table 10.7 The distribution of population and establishments in Lyon, 1982–1999

	City centre	Suburbs	Urban fringe	Total				
	Pop.	Establ.	Pop.	Establ.	Pop.	Establ.	Pop.	Establ.
Change 1982-99					21.4	47.3	51.6	11.5
(%)	6.1	-7.6	5.6					9.4
1982 (%)	37.5	54.2	48.8		34.4	13.7	11.4	100.0
1999 (%)	35.7	46.1	46.3		38.2	18.0	15.7	100.0

Source: Aguiléra-Bélanger, 2001.

On a larger scale (within a radius of 45km around Lyon), Mignot (1999) examines the location of the establishments of propulsive sectors, *i.e.* manufacturing and high-order services, excluding personal services and the wholesale trade which follow population. For the period 1982–1996, the study suggests dispersion of economic activities, especially marked between the first ring and a distance of 25km, and concentrated in a few poles. Despite this deconcentration, the city centre remained dominant in 1996 with 37 per cent of the establishments of the region (compared to 43 per cent in 1982).

In Bordeaux, the database is for salaried employment in 211 zones of the agglomeration and communes on the urban fringe (INSEE, IRIS 5000, 1990). A zone is defined as a pole if its ratio of salaried employment to resident workers is greater than unity and if the zone contains more than 2000 jobs. Contiguous zones are grouped together only if no zone is larger in area than the city centre. No employment pole appears on the urban fringe, so that significant employment sprawl applies only to the urban agglomeration, where 15 employment poles can be identified. Employment density in the city centre is 230 times higher than on the urban fringe and 11 times higher than in the suburbs. The poles account for 55 per cent of total employment in the agglomeration. Employment is less concentrated in poles than in Paris. The size of poles is not clearly related to distance to the centre, but the spatial scale (agglomeration) is not comparable to the Ile-de-France. Most poles are located near the ring road and are close to each other.

In Dijon, the Urban Community (COMADI) is divided in 114 zones with 240,000 inhabitants and 70,800 jobs. The Urban Community lost more than 3600 jobs from 1990 to 1999. An employment pole includes the zones satisfying several criteria: the number of jobs, employment density and the employment-to-population ratio (Baumont and Bourdon, 2002). Five poles, including the centre, make up 50 per cent of the Urban Community employment. A principal component analysis showed that i. the central zones were both people and job rich; ii. zones in the first ring are comparatively rich in housing but poor in jobs; and iii. the peripheral zones are either mostly residential or mostly employment zones. The city may be too small to have a centre where jobs outweigh housing. However, despite the size of the city, multipolarization clearly occurs and employment has moved to the periphery ([Table 10.8](#)). The centre remains the dominant pole.

Table 10.8 Distribution of employment in the COMADI (Dijon)

	Poles/COMADI	Periph poles/COMADI	Centre/poles	Centre/
1990	50.6%	33.2%	35.5%	18.0%
1999	51.2%	34.9%	31.8%	16.3%

Source: Calculations by Baumont and Bourdon (2002)

Multipolarization and Commuting

The rise of secondary employment poles in an urbanized area counterbalances the negative effects of increasing agglomeration in a single centre. According to the theory of agglomeration, a growing city generates increasing land prices and increased commuting costs. Above a certain size, this phenomenon leads to the rise of new activity poles which reduce the negative effects of urban growth. Given population sprawl, the deconcentration of employment should result, other things being equal, in a decrease in commuting distances. In other words, a multipolar structure should be more efficient than a monocentric structure in terms of commuting. Thus, the observed employment deconcentration should bring jobs and residences closer.

Unexpectedly, there is strong evidence that this is not the case, and that the opposite trend prevails. The results of the last Census confirm that commuting distances are still increasing, continuing a familiar trend since the 1960s. The deconcentration of employment did not stop this process ([Table 10.9](#)).

Residents on the urban fringe are the most mobile: almost 80 per cent work in another commune. This is true of more than three-quarters of suburban inhabitants. In the city centres, less than one-third of residents leave their commune to work. All groups have increased mobility, but the greatest increase is among people living outside urban agglomérations, especially those residing on the Parisian urban fringe: this is because of the large radius of this ring. On the contrary, workers living in Paris commute an average distance less than the national average of other city centre residents. This is the result of the massive concentration of employment in and close to Paris (Talbot, 2001).

Table 10.9 Increased commuting in France, 1982–1999

Residence and jobs are located in	1982	1990	1999			
% workers	Average distance	% workers	Average distance	% workers	Average distance	
Different communes	46.1	13.1	52.3	14.1	60.9	15.1
Different departments	12.3	23.6	13.7	25.9	15.4	26.7
Different regions	2.1	61.7	2.7	61.5	3.1	56.9

Source: Talbot (2001).

In the Ile-de-France, the number of commuting trips rose by almost 10 per cent between 1990 and 1999. Moreover, their direction changed. The proportion of flows toward the city of Paris fell from 32 per cent to 28 per cent, while the flows towards the main secondary poles increased by 17 per cent. During the same period, reverse flows from Paris to the periphery rose by 25 per cent, but they represent only 9 per cent of all commuting trips. A striking feature is the increasing primacy of commuting between communes of the periphery, which represent more than one-half of the total commuting (Berroir, Mathian, Saint-Julien, 2002). This supports the hypothesis of a multipolar structure in the Ile-de-France.

Three hypotheses can be proposed to explain this increase in commuting. The first is the location behaviour of households. Proximity to work is not necessarily the first priority for household location. Amenities and quality of life are increasingly important. This would be consistent with the fact that, on average, high-skilled wage-earners live further from work. The second explanation is that population spreads more rapidly and in a more diffused manner than employment with the result that employment becomes more concentrated relative to population. There is evidence for this phenomenon, although it has been less apparent in recent years. The third factor is related to the increasing specialization of the employment poles analyzed below. People, especially skilled workers, cannot find their ideal job everywhere. The effects of specialization are reinforced by the proliferation of multiple worker households.

Specialization and Distance: the Monocentric Dimension

If we look carefully at the economic composition of the different activity clusters, the image of urban sprawl changes. The development of a constellation of employment poles conceals a marked spatial differentiation in the location patterns of economic activities, depending on the sectors concerned and on the functions carried out. The distinction between decision and executive activities, or equivalently between high-order and low-order activities, is the key to understanding the restructuring of urban economic space. The French style is characterized by the following features. First, poles are clearly specialized and therefore are complements rather than substitutes; second, the specialization of the poles is geographically organized, principally in terms of distance to the centre; third, the city centre always dominates the whole structure and concentrates high-order services which are not readily amenable to decentralization and maintain a marked preference for the centre (Benard, Jayet and Rajaonarison, 1999; Léo and Philippe, 1998). The apparent decline of city centres in terms of employment or establishments masks a new specialization in terms of high-order strategic activities.

This gives rise to an original feature. High-order services are rarely present in the periphery, and they generally maintain a clear preference for the centre. Thus, high-order services remain very much concentrated in city centres. However, French centres do not look like American CBDs because they also have a significant resident population.

A Variety of Poles: A Panoramic View

An overview is provided by the functional typology of the 117 peripheral poles identified in urban areas with more than 100,000 inhabitants (Gaschet, 2001). This analysis is based on the location quotients of 9 economic sectors (private salaried employment alone). The resulting classes and the corresponding location quotients are shown in [Table 10.10](#). This analysis leads to a series of conclusions.

- i. Many poles are clearly specialized in industry or services, and among services in high-order services or in household services. Only one class mixes all categories of services and another one combines industry and producer services. It is difficult to find an approximation to an edge city.
- ii. The first class is better represented in smaller cities, while classes 3 and 4, specialized in high-order services, are more common in larger cities.
- iii. The specialization of the peripheral poles is closely correlated with their distance to the centre. The industrial poles are more remote from the centre, while poles specialized in high-order services appear closer to the centre. The former are less sensitive to the agglomeration economies generated by the centre, while the latter have a strong need for centrality because they involve more complex and personal interactions with activities located in the centre.
- iv. The changing pattern of the location quotients in centres since 1976 displays a decline in their relative share of industry and an increase in their relative share of personal services, public services, finance and real estate. Thus, the centres display a process of functional specialization in specific activities and especially in high-order functions.
- v. The same analysis shows a weak tendency toward the deconcentration of certain producer services. However, this is subject to a proximity constraint and does not alter the primacy of the centre.

Table 10.1 Location quotients in five classes of French peripheral poles, 19970

Classes specializations	and Industry specializations	Industry & producer services	High-order services	Diversified services	Household services
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Number of poles	29	37	13	20	17
Location quotients					
Industry	1.43	1.03	0.80	0.71	0.74
Transport	1.16	1.10	0.68	0.78	0.85
Construction	1.04	1.27	0.67	0.77	0.87
Commerce	0.71	0.74	0.85	1.22	1.87
Personal services	0.66	0.71	0.91	1.05	1.27
Public services	0.56	0.66	0.63	1.24	0.83
Consultancy	0.61	1.05	2.00	1.62	0.58
Operational serv.	0.73	1.46	1.56	1.04	0.80
Finance, real estate	0.50	0.60	1.67	1.62	0.79

Source: Gaschet (2001).

Moreover, the specialization of the city centres in services¹⁰ seems to have significantly influenced the general dynamics of employment sprawl from 1976 to 1997 (Gaschet, 2002). Highly specialized city centres at the beginning of the period recorded lower deconcentration rates, independently of the economic composition of the existing poles. Moreover, the dynamics of city centres depend on their specialization in services, which indicates an endogenous process of core development.

All these features corroborate the hypothesis of the ‘Monocentric Specialized Multipolar’ (MSM) structure.

Confirmed by a Closer Look

In the Ile-de-France

The economic and spatial organization of poles in the Ile-de-France confirms, details, and strengthens these results (Boiteux-Orain and Huriot, 2001; Boiteux-Orain and Guillain, 2002).

A synthesis of specializations is shown in Table 10.11, using the classification of poles discussed above.

Table 10.11 Specialization of employment poles in the Ile-de-France, 1978–1997

	Central poles	Primary poles	Isolated poles			
	1978	1997	1978	1997	1978	1997
Industry	0.82	0.77	1.27	1.09	2.31	2.24

High Tech	0.79	0.63	1.24	1.33	0.78	1.08
Construction	1.11	0.56	1.29	0.99	0.59	0.84
Transp., com.	0.70	0.95	1.08	1.31	0.94	0.56
Wholesale/Trade	0.98	0.77	1.16	1.36	0.54	0.48
Personal services	1.06	1.11	0.81	0.73	0.91	1.16
FIRE	1.64	1.64	0.37	0.64	0.49	0.78
Producer services	1.41	1.31	0.59	0.91	0.53	0.56
Public services	0.88	0.86	1.01	1.01	1.29	1.32

Source: Boiteux-Orain and Guillain, 2002.

Specializations are well marked. Primary poles are located in the inner ring and isolated poles in the outer ring. The central poles, *i.e.* in the Parisian ‘megapole’, are clearly specialized in personal services, FIRE (finance, insurance, and real estate) and producer services. Personal services are associated with the large population of these poles, while FIRE and producer services benefit from strong agglomeration economies. The primary poles are more specialized in high technology, transport and wholesale trade, which need both space and accessibility. The isolated poles are highly specialized in industry (excluding high tech), which requires space rather than proximity, and personal and public services that follow population.

Since 1978, some specializations have been significantly reinforced, principally in the primary poles (for high tech, transport and communications, and wholesale trade) and in isolated poles (for industry and personal and public services). In the central poles, where job losses have been severe, the degree of specialization has declined in several sectors.

But these results come from data about averages. More detailed analysis reveals a few individual poles specialized in producer services, namely three primary poles and one isolated pole located in the south of Paris. Several other isolated poles are almost exclusively specialized. This does not result from an agglomeration of similar activities but from the location of a single very large establishment or activity: for example, Euro Disney makes Chessy specialized in personal services while Renault accounts for manufacturing specialization at Aubergenville. To a lesser extent, airports give their communes a marked specialization in transport and communications (Boiteux-Orain and Huriot, 2001).

From these observations, we can draw several conclusions about restructuring in Paris. The ‘megapole’ maintains its supremacy in services, especially in FIRE and producer services. However, high-order services have deconcentrated from Paris toward other central poles or to primary poles very close to the centre. This particular pattern suggests that there is really no decline of the centre, but a redistribution of employment and especially of high-order services within the ‘megapole’ and in its immediate vicinity. The attractiveness of Paris has generated a saturation of Parisian space and resulted in central activities overflowing toward a few poles. This corresponds to an enlargement of business spaces rather than suburbanization proper. The examples of industry close to Paris are easily misunderstood. They largely refer to the headquarters of industrial firms, *i.e.* high-order functions, rather than industrial establishments.

Finally, the deconcentration of high-order services is more thoroughly analyzed by breaking up FIRE and producer services into 16 sub-sectors (Boiteux-Orain and Guillain, 2002). It then appears that the location behaviour of specific high-order services are clearly differentiated and that consequently ‘high-order services poles’ are also differentiated. Two categories can be distinguished. The first includes finance, insurance, financial and insurance auxiliaries, accounting, law services and advertising, which remain markedly concentrated in Paris and rarely present outside the ‘megapole.’ These activities are mostly strategic functions of decision-making or decision support, and more generally functions of metropolitan coordination (Bourdeau-Lepage and Huriot, 2002). The other one primarily involves technical services that are more mobile and can disperse to several, more distant peripheral poles.

These observations strengthen the idea of the complementarity of employment poles and of the specificity of the main centre. Location and detailed specialization of the poles show that they are still strongly dependent on the centre, where most strategic managerial and coordination functions are located. We clearly observe the ‘Monocentric Specialized Multipolar’ (MSM) structure.

Some additional remarks complete this interpretation. First, the less specialized poles are frequently old cities in the outer ring which have benefited from proximity to Paris. The more recent poles are much more specialized. Second, the MSM structure differs from the classical hierarchical structure, as the largest poles are not necessarily the most diversified nor the closest to the centre.

Return to the Provinces

Lyon, Bordeaux and to a lesser extent Dijon (because of its size) follow the same pattern. The centre generally remains specialized in high-order functions (finance) and in personal services including hotels and restaurants.

In Bordeaux, as in Paris, law services are highly concentrated: they account for 30 per cent of the establishments in the centre and only 4 per cent in the periphery. On the contrary, 17.5 per cent of the establishments are devoted to computer activities in the periphery and only 4.7 per cent in the centre. In peripheral poles, producer services are associated with industrial and transportation activities rather than with other services. They are mainly technical services such as maintenance or engineering.

In the Lyon urban area, more than 90 per cent of producer services establishments are located in the urban agglomeration, *i.e.* the centre and its suburb. These services look to either the city centre or the ‘new spaces’ in nearby West Lyon (Aguiléra-Bélanger, 2001), but as everywhere, law services prefer the centre. Industry, personal and collective services tend to locate in large communes far from the centre.

In Dijon, 68 per cent of the private jobs are tertiary, and 17 per cent are in high-order services. The centre remains the prime site for these services, despite a large fall in employment in the 1990s offset by an increase in the peripheral poles. High-order services are broken up into specific sectors as in the Ile-de-France (Baumont and Bourdon, 2002). Again, a sharp spatial differentiation arises. Banking and insurance and their support services, real estate and law services remain located primarily in the historic centre, while R&D and engineering are located in peripheral zones. Advertising and architecture are also located in the periphery but not in the identified poles.

Poles rather than Centres

Let us pay a little attention to terminology. The choice of terms is not meaningless. In the MSM model, there is no multiplication of centres and there are no *edge cities*. In general, there is only one single

centre and multiple *poles*. This distinction refers to the definition of the term *centre* proposed by Huriot and Perreux (1994, 1997) and to the definition of *cities* stated by Baumont and Huriot (1997) and by Baumont *et al.* (1998). These terms are polysomic and often used loosely. The confusion increases when we add the term *agglomeration*, frequently used to designate centre, city and sometimes the metropolitan region.

The centre is not only a place of agglomeration. It is also a place of accessibility, a place maximizing interactions, which concentrates population, employment, wealth, knowledge, information, culture, capacity for economic, scientific and cultural innovation, as well as the resources for political, legal and economic action (Huriot and Perreux, 1994). From an economic point of view, it is the privileged place of creation, decision and control (Bourdeau-Lepage and Huriot, 2002). Thus, the centre interacts asymmetrically with other locations.

The city is:

a human concentration in space resulting from the organization of diversity, and where interactions are of sufficient size to take place in a complex endogenous agglomeration process.... Defining the city solely in terms of concentration or of density is to overlook the point that the city is a composition of *necessarily* heterogenous agents and activities satisfying a *minimum degree of differentiation*. (Baumont *et al.*, 1998).

The preceding analysis provides evidence that the new concentrations of employment in the periphery of cities are generally not sufficiently diversified and autonomous to give rise to new city centres, or new peripheral cities like ‘edge cities’. The structure of specialization is such that, except in a minority of cases, the whole city region remains dominated by the traditional city centre, the primary or even the sole place of strategic economic functions. This is why we speak of peripheral poles rather than of centres, and explains the concept of the Monocentric Specialized Multipolar model.

The comparison between spatial developments in Paris and San Francisco illustrates the point. In the two cities, the centre specializes in high-order functions, but the peripheries differ in their relationship to the centre. Even if the development of Silicon Valley has been facilitated by the high quality of the economic, cultural, creative and residential environment of the city of San Francisco, it has been largely autonomous. The development of the *Cité Scientifique* near Paris has been much more dependent on the capital. Globally, the San Francisco region is relatively integrated, while the Ile-de-France is more segmented with specialized poles dependent on the city of Paris (Peyrache, 1993).

Conclusion

In France, the formation and growth of new peripheral employment poles is clearly established, but the monocentric model is more resistant than in the US. The peripheral poles, especially the largest, are more often than not relatively close to the centre. Moreover, the peripheral poles are clearly specialized and are complementary rather than substitutes. Accordingly, these peripheral clusters are not autonomous and are at least partly dependent on the city centre. Edge cities, in the sense of large, completely diversified and autonomous new urban poles emerging in the periphery of the old city centres are hardly to be found in France. One of the most important differences is because of strategic metropolitan activities, especially high-level services. Some of these activities are based in peripheral poles but many retain a marked preference for the centre. The different high-level services exhibit very different location behaviour. The case of Paris is particularly interesting. High-level services such as producer services are decentralized in poles very close to and even adjacent to the city centre. In particular, finance, insurance and legal services, and more generally super-management activities, remain concentrated in the centre. These characteristics are particularly clear in Paris, but

they are also observed to varying degrees in other cities like Lyon, Bordeaux or Dijon, which are very different in size and in their economic roles.

The outcome is that the French style displays some characteristics of the pure multipolar model and some features of the monocentric structure, which gives support to the MSM hypothesis. Monocentricity is more observed in the case of the most strategic activities. Other jobs are relatively dispersed, and at this level of aggregation the multipolar structure is universally observed. When only the highest functions are examined, the domination of a single centre is clear. The functions of decision and coordination are centralized and the whole urban structure heavily depends on this single centre. There are no real multiple centres but only multiple poles which spatially reorganize cities but do not endanger the economic domination of the centre.

Of course, this interpretation is a simplification. Counterexamples can easily be found. There is a great variety among French cities. However, general trends and average features have been complemented by a series of case studies which confirm the general analysis. In the light of these studies, the MSM hypothesis seems to be sound, but further results will be needed to support it.

¹ The distinction between suburbanization and periurbanization is based on the French definition between '*banlieue*' (suburb) and '*couronne périurbaine*' (urban fringe). See the Appendix for more information.

² E.g. Aguiléra, 2002; Aguiléra-Bélanger, 2002; Alvergne and Coffey, 1999; Gaschet, 2000, 2001, 2002; Gaschet and Lacour, 2002; Léo and Philippe, 1998; Mignot, 1999; Péguy, 2002, and the work in Dijon by the LATEC on the Paris region and Dijon, and by the INRA on periurbanization of rural zones (note that some of the studies by the LATEC are in the process of completion and not yet published. But their initial results are noteworthy).

³ It is worth noting that it is precisely in these cities that the main research groups on metropolization and suburbanization are located.

⁴ These densities are evaluated from the average distance between cities.

⁵ The share of the population living in urban units was 52.9 per cent in 1936, 57.3 per cent in 1954, 63.2 per cent in 1962, 70.1 per cent in 1968, 72.9 per cent in 1975, 73.4 per cent in 1982 and about the same in 1990 (Fanouillet and Madinier, 1996).

⁶ This was the result of an increase between 1975 and 1982 followed by a steady decline.

⁷ All these figures are calculated on the basis of the 1990 limits of urban areas.

⁸ As in most similar studies, these values have been chosen after a trial and error procedure so as to obtain significant results. This procedure might appear totally subjective. In fact it is subjected to i. the *a priori* knowledge of the phenomenon being studied, and ii. the existence of catastrophic changes resulting from varying values.

⁹ This quotient is defined for each commune as the ratio of employment-to-population of the commune divided by the corresponding ratio for the department where this commune is located.

¹⁰ Producer, operational and personal services.

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Appendix: French Statistical Definitions of Cities

French urban territories are defined at different spatial levels and involve two statistical approaches. The first approach relates to an unbroken pattern of housing. ‘Urban units’ (*unités urbaines*) are sets of one or more communes covered by continuous housing, no more than 200 meters apart, and totalling at least 2000 inhabitants. All such communes are urban; others are rural. Urban units with more than one commune can be divided into a ‘city centre’ (*ville centre*) and ‘suburbs’ (*banlieue*). The city centre is formed by the commune whose population makes up more than 50 per cent of the unit’s population, or by the main commune and all the communes whose population is more than one-half of that of the main commune. The other communes form the suburbs.

The second approach considers employment. An ‘urban agglomeration’ (*pôle urbain*) is an urban unit with at least 5000 jobs and which is not on the ‘urban fringe’ of another urban agglomeration. The ‘urban fringe’ (*couronne périurbaine*) of an agglomeration is the set of the urban or rural communes where at least 40 per cent of the working population has a job in the pole. The ‘multipolarized communes’ (*communes multipolarisées*) are urban or rural communes not belonging to the urban fringe but where at least 40 per cent of the employed population has a job in one of several urban agglomerations. Finally, an ‘urban area’ (*aire urbaine*) is composed of one agglomeration and its urban fringe. ‘Urban space’ (*espace urbain*) is composed of contiguous urban areas and their related multipolarized communes.

This chapter focuses on the urban area approach and deals with the five concepts of city centre, suburbs, urban agglomeration, urban fringe and urban area:

$$\text{City centre} + \text{Suburbs} = \text{Urban agglomeration} (> 5000 \text{ jobs}) + \text{Urban fringe} = \text{Urban area}$$

Chapter 11

Location Patterns of Producer Services: Between Centralization and Urban Sprawl; French and Swiss Case Studies

Antoine Bailly

Introduction: Two Different Processes

All western countries have experienced important suburbanization and exurbanization processes following the development of mass public transport and widespread car ownership. This can be seen in the landscapes, with commercial strips and shopping centres expanding along the main roads, and housing lots more or less dispersed on the outskirts of the old cities. However if a comparison is made, for example between France and Switzerland, clear differences appear. Outside French cities the ribbon commercial and services development is very clear, with its flashy buildings and coloured advertisements surrounded by parking lots. The bungalows are either aligned along the roads or organised in small lots, giving birth to a M.E.P. ('Moth-Eating' Process; [Figure 11.1](#)).

In Switzerland ribbon housing and commercial development is unusual. Peripheral shopping and service centres are planned as nodes, with an architectural design and covered parking. The advertisements are discrete and often public transport gives access to these nodes. New houses are built on the outskirts of existing villages in a continuous process. The density is generally high without separation from the existing habitat. In between the villages, the M.E.P. does not exist; thus space for agricultural belts is left ([Figure 11.2](#)).

How can these differences be explained? Do they depend on local planning and the power of the local officials? In this paper through a detailed analysis of the processes occurring in two French cities (Dijon and Grenoble) and two Swiss cities (Geneva and Lausanne) in the intermediate or (producer) services sector, we explain the formation of different urban, suburban and exurban patterns since the 1960s. This very empirical approach, based on the study of the evolution of activities in cities and the demand for office space, helps to explain the processes going on in and outside French and Swiss cities.

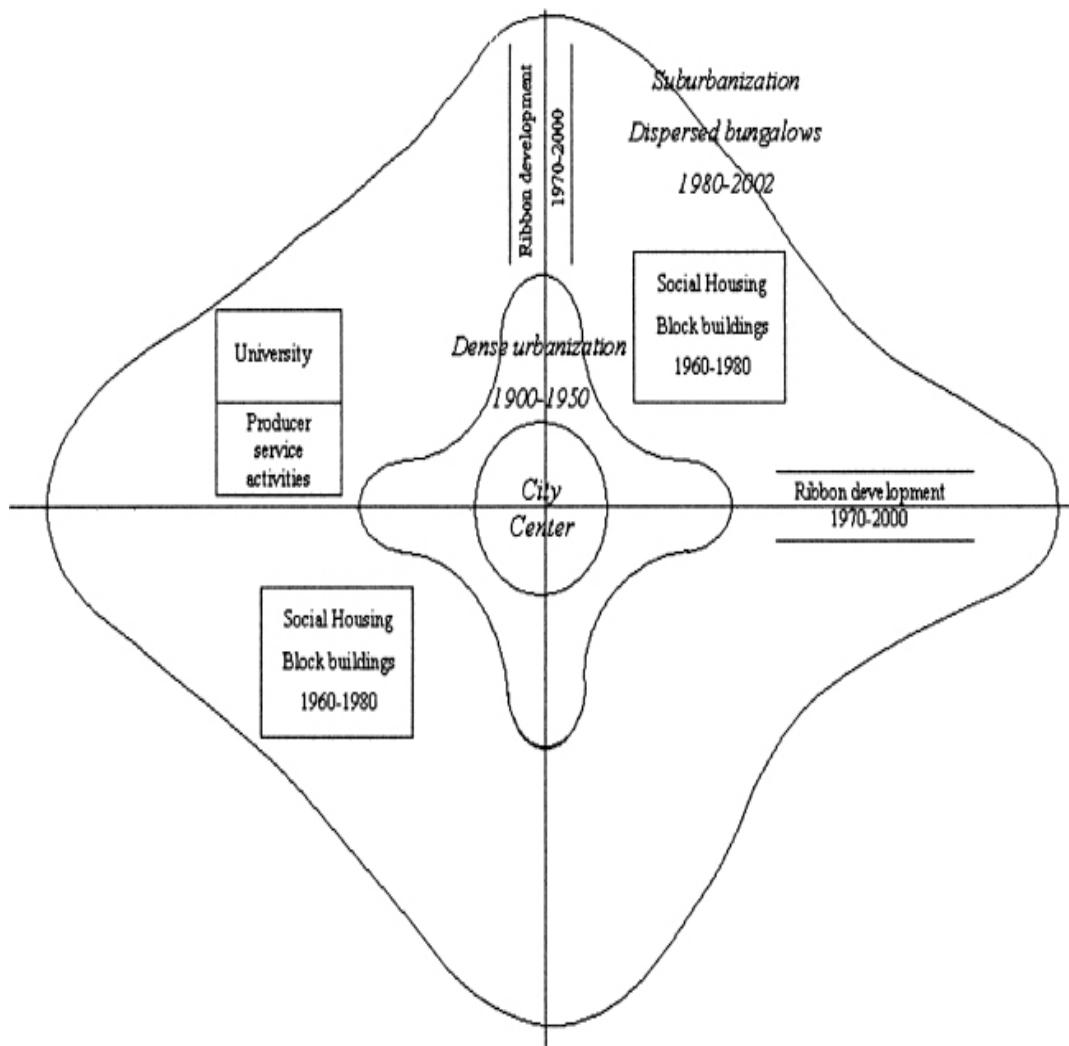


Figure 11.1 Urban form in France

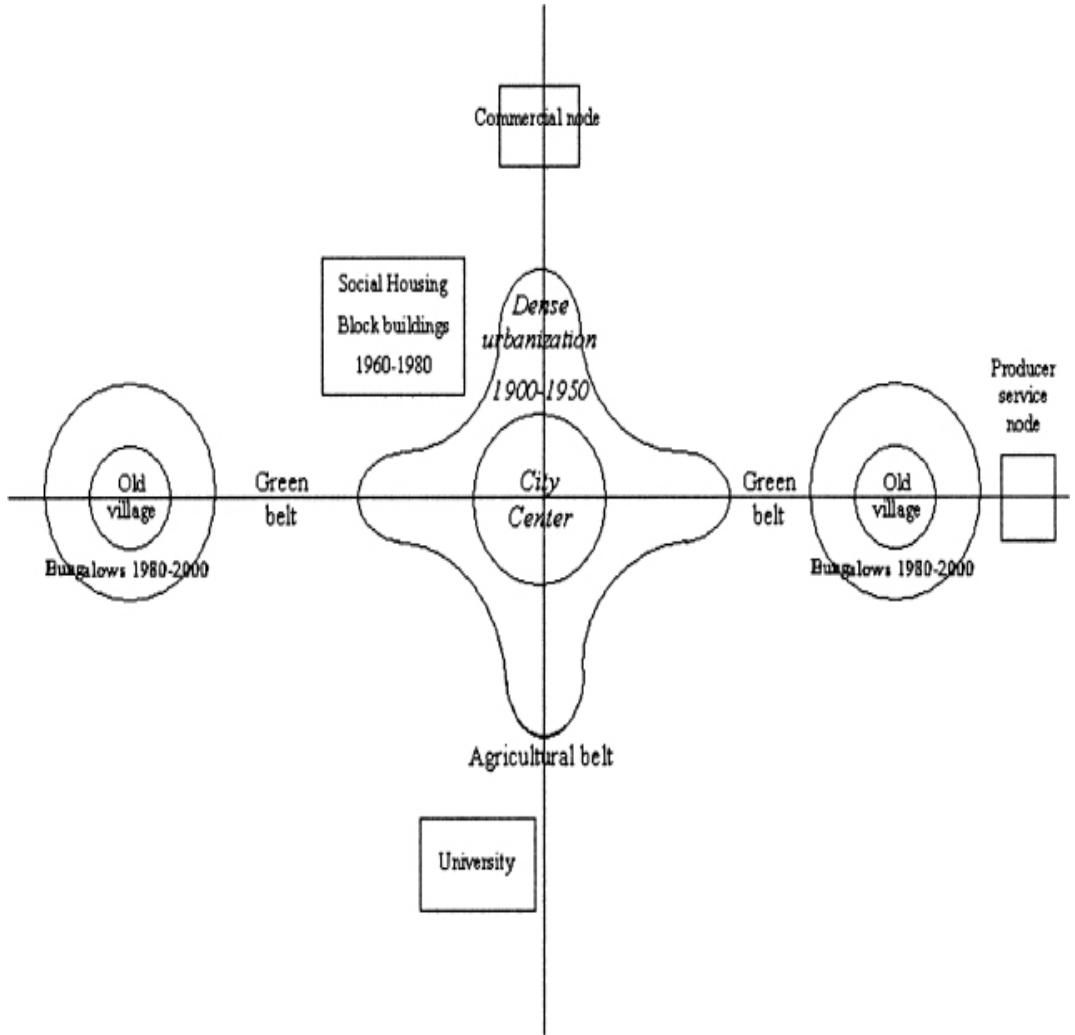


Figure 11.2 Urban form in Switzerland

A Theoretical Approach

The Location of Services in the 1960s and 1970s

In the 1960s most western countries became service economies via the development of consumer services. Public services (health, education, culture) and private services (retail trade, banking, insurance, etc.) grew rapidly in response to the new demand of the consumer society; their location, consequently, was hierarchical (a la Christaller), to be close to the market. Because customers travel to receive services, the location of the service is of prime importance: in the central business district (CBD) when possible, on the outskirts of the old cities where vacant lots were available or on parcels of land which used to be devoted to other activities (barracks, city walls, slaughter houses, railroad tracks, etc.). It was possible to build office buildings, with parking space on these lots and to develop retail activities and houses nearby.

The Location of Services in the Late 1970s and the Early 1980s

New strategies of development appeared in the 1970s because of the growth of intermediate (producer) services. This development reflected the need for enterprises to get R + D, engineering, management, auditing, marketing and similar services.

External producer services, bought outside the enterprise, were rapidly growing for reasons of rentability, flexibility and productivity. To provide these specialized services, service establishments needed to be in close contact with their clients; consequently, they could be located either in the CBDs to be close to firms' headquarters, or in peripheral locations in industrial parks (technological parks). Because most new enterprises were growing in the peripheries of French cities, the location of services was increasingly peripheral. This was not the case in Switzerland because of the attraction of the CBDs and the presence of political and administrative power in the cantonal capitals.

The Location of Services in the 1990s and the Present

Producer services continue to grow because of their importance for firms in the competing markets of a deregulated, flexible economy. Innovation and information are essential for the success of firms; the interdependence between industrial and service firms reinforce the need for accessibility to clients. The development of networks of service activities shows the need for fast and close contacts to rationalize and improve the exchange of information and minimize transaction costs.

Because of their specialization, service sector businesses use a specialized labour force, and take these factors into account in their choice of locations; the main consequence is a social and spatial division of labour. Higher level functions are mainly located in the CBDs, to be close to decision-making networks. Production and routine services are relocating to the periphery to get cheaper land close to new freeways. A complex movement is appearing with centralizing forces for higher level functions and decentralizing ones for routine service activities. However, these two movements are different in France and in Switzerland; centralizing forces are predominant in Swiss cities while decentralizing forces are dominant in French cities.

Back and Front Offices

Two sets of theories explain these double processes. The first one, based on the functional division of activities in back and front offices, follows the logic of optimal location. The second one, based on the 'milieu' theory, reflects the strategic role of services in urban production systems. The first one is stronger in France, the second one in Switzerland.

The supply/demand relation is central to both approaches. Even if new technologies help transmit information, distance remains a major constraint in obtaining certain services; face-to-face contacts between suppliers and consumers may be necessary for the exchange of strategic information. In Switzerland this process leads to concentration because demand focuses on the CBD where political power is located. In French cities,

without decision-making centres, CBDs are abandoned by service enterprises looking for better locations close to freeways; they can only hold on to service activities if they are based on regional demand.

Centre-Periphery: Two Evolving Concepts

Our analysis of the evolution in the location of service activities is based on a centre-periphery type of approach; it is necessary to clarify what we mean by these two concepts. Both of them are evolving concepts in an economic, social and cultural context. What was central in 1960s can now be peripheral, marginal in the 2000 economic system, or vice-versa since the centre-periphery concepts are not only geometrical, but depend also on a position in a network of activities.

When we talk of the periphery, we mean an external position outside a system; its opposite, the centre, is the place where interactions are maximized, a place of power. But some centres exist in the periphery of cities, when these centres attract networks of dynamic activities. This process shows that certain parts of the periphery can be central, just as certain parts of the centre can be peripheral. For example, old office buildings, close to the centres, can today be outside the main network of economic activities and consequently outside the core economic system.

An Applied Approach to Urban Sprawl in France

Polynuclear Cities

In each of the case studies chosen (Dijon and Grenoble) we analyse the evolution of their city centres and, by direct interview with service employees and managers, their reason for the choice of the site of service centres, their perception of the milieu, their economic networks, their decisions to stay or to move and their difficulties with the location of employment, employees or business. The case studies generally confirm our theoretical hypothesis. A polycentric model appears in both cities, because of spatial and economic locational constraints (Figure 3). The city centres are important only for those firms needing centrality and that are able to pay for such expensive locations. Around the centres, in the buildings of the 1970s, some service activities are still in a front office position but only when the buildings keep their prestige, which is not always the case.

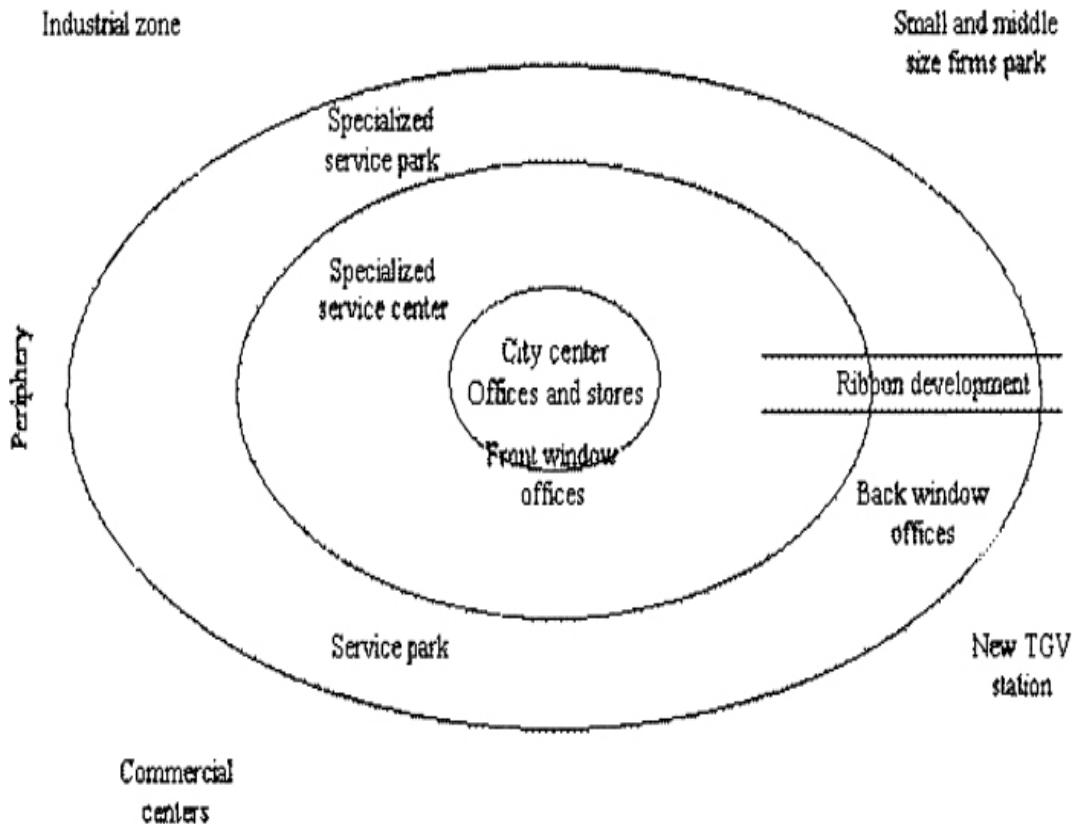


Figure 11.3 Urban polycentrism in France

The polynuclear city is the result of a segmentation of the service sector in front and back offices, because of functional specialization. Old office buildings, close to the centres, cannot always compete with the office parks in the periphery because they do not offer the same accessibility or the same image yet can be more expensive to operate. When the image of a central office building is poor, its future as a front office is difficult to maintain especially when the building is half-empty. However, when they are still used by firms' headquarters, they can attract firms looking for a prestigious central location. The role of image is significant for services, and is as important as accessibility.

Concentration and Deconcentration

The questions of accessibility in a context of supply-demand relations are essential in understanding a double process: concentration of services close to corporate headquarters and administrative poles (regional direction) in the city centre (or very close to it), dispersion of routine services and services to enterprises in the periphery (back offices).

Our analysis shows, however, the rapid evolution of the supply/demand context for some office buildings. One of the main office buildings in Dijon, which used to be central, is now seen as peripheral, because of difficult access by car. The Meylan activity area in Grenoble, which used to be peripheral, is now seen as central, because of its economic dynamism. This evolution has important consequences for the location of offices, especially in the case of degradation of the image in a slowly growing centre.

In the periphery, dynamism is linked to the attraction of new service activities; many of these services are very fragile, with a rapid turnover of enterprises. Rapid changes are occurring, showing that in middle-sized cities the renewal of service activities is important, especially in periods of economic crisis. Economic difficulties are responsible for the problems of both old and new service centres. At the same time, central office buildings and peripheral parks are hit by the crisis, except for those with a dynamic and positive image.

In conclusion, our two French cities still have some headquarters and some regional activities in the CBDs. However, office buildings can only keep their attraction if they keep a regional outlook. Without good urban planning, taking into account these processes of concentration-deconcentration, the future of some office buildings can be questioned because of the low quality of the surrounding urban milieu. This could lead to the growth of a ‘doughnut’ as in the US cities, around the historical centre, by the degradation of the buildings of the 1960s.

To avoid a leap-frogging movement of activities towards the periphery, it is necessary to undertake a global rehabilitation of the areas around the historical centres integrating urban renovation and public transport. The double process for the location of service activities has to be integrated as a major trend in urban planning to deal more efficiently with the future of cities. Economic analysis and urban planning should be studied jointly if we really want to be able to understand the evolution of service activities. To assist in this understanding, more case studies on middle-size cities and metropolitan areas should be undertaken to provide a sounder base for analysis and to improve our theoretical knowledge.

An Applied Approach to Urban Sprawl in Switzerland

The Declining Importance of CBDs in Attracting Producer Services

The centres of Geneva and Lausanne continue to attract firms because of the market they represent. However, relocation to the rest of the Leman basin and the emergence of smaller cities in the rest of the Lemanic region indicate that there are other dynamic areas which constitute a real alternative to locations in the centres. In other words, the two major cities do not have a monopoly in the development of producer service activities. Nevertheless, contrary to what has been observed in several North American cities, there has been no noticeable decline in the city centres or in the outer reaches of urban areas, nor have ‘edge cities’ resulted as a consequence.

The centre-periphery model, which assumes that CBDs have a strong attraction and monopolize producer services activities, no longer reflects the complexity of the Swiss cities. City centres are no longer the only places where the conditions for the development of producer services are to be found. Access to information, expertise, scarce resources and markets, which are, in principle, the privilege of centres and constitute one of the

advantages of centrality, is nowadays possible from the most diverse places because of the high level of rail, highway and information accessibility in Switzerland.

The phenomenon of ‘front and back office,’ as expressed in the theory of the spatial division of activities, does not apply in these two cases. We did not encounter any real ‘back offices’ because all firms in the study were in direct contact with their customers. Company branches are not considered ‘back offices.’ What can be observed is a general relaxation of the constraints on concentration at the centre and a gradual adaptation of producer services to a new mode of organization offering more possibilities in terms of location. Firms look for sites to match their specific needs. Their internal needs relate to the creation of desirable working conditions, and their external needs call for a high level of real accessibility to their customers. In spatial terms, we can conclude that we are confronted with a model of flexible production which is decentralized and polycentric, which does not require rigid spatial organization, and which allows the observed trends to develop simultaneously.

City Size and Centrality

In the current system of production, the size of cities is not the only criterion which determines the attractiveness of a location for producer services. Several territorial dynamics come into play and the transport and telecommunications infrastructure (real accessibility) allows firms to get away from the hierarchical ordering of activities. Re-urbanization and spatial dispersion of firms outside centres, while recent, follow the same trend.

The findings therefore confirm the pertinence of the ‘milieu’ explanation and the specifications and dynamics of territorial markets. Producer services enhance the strengthening of the economic and social dynamism of cities in the Lemanic region. It is because of a supply adapted to their milieu that producer services have been able to respond to the needs of other firms then, later on, go beyond their locations in search of complementary markets. This is how producer services bring added potential to their base territory. This milieu dynamic is linked to recent forms of flexible production. According to the models of flexible specialization, the concentration of producer services has appeared, not only in city centres (for example, in the area around the Geneva Airport or in the eastern and western parts of Lausanne), but also in small cities in the Leman agglomeration (for example, Nyon) and in the cities of other cantons of Switzerland (Neuchâtel, Fribourg). Nevertheless, we cannot talk about corporate activity complexes (clusters) because only producer service activities are located there. Furthermore, these concentrations do not conform to the definition of ‘clusters’ because they do not usually establish complementarities, thereby creating a specialized pole in a given field (computer services, management, etc.).

Is a Network of Cities an Alternative to Concentration in Centres?

At the macroeconomic level, observation reveals an alternative to the concentration of producer services in central urban areas. However, we cannot subscribe to the concept of a city network. Such a network would imply that there are specializations and complementarities between the services provided by each city which do not appear in the study, except between the two city centres in our sample: the specialization of Geneva in the international market and in management services and the specialization of Lausanne in the Leman basin market, in the fields of communications, advertising and computer services. Company officials often regard Lausanne as the real gateway to French-speaking Switzerland, whereas Geneva is seen as a market on its own. This thinking is partly because of the city's international outlook, and partly because of the size of its market relative to the scale of French-speaking Switzerland.

Conclusions

Two Models for the Location of Producer Services

The cases we have considered show evidence of dispersion or decentralization, but in the Swiss case studies the forces resulting in this are not as powerful as in France.

[Figure 11.4](#) illustrates the strength of decentralization forces. In France, the attraction is towards the periphery and this results in a polynuclear structure in the cities. In Switzerland, a double process exists with both centralization and decentralization forces. In addition, a third location (small cities) outside the main metropolitan areas can also be attractive site for businesses.

[Figure 11.5](#) represents the location of producer services: on the far periphery in French cities and a triple mode in Swiss cities (centre, periphery, and in surrounding smaller cities).

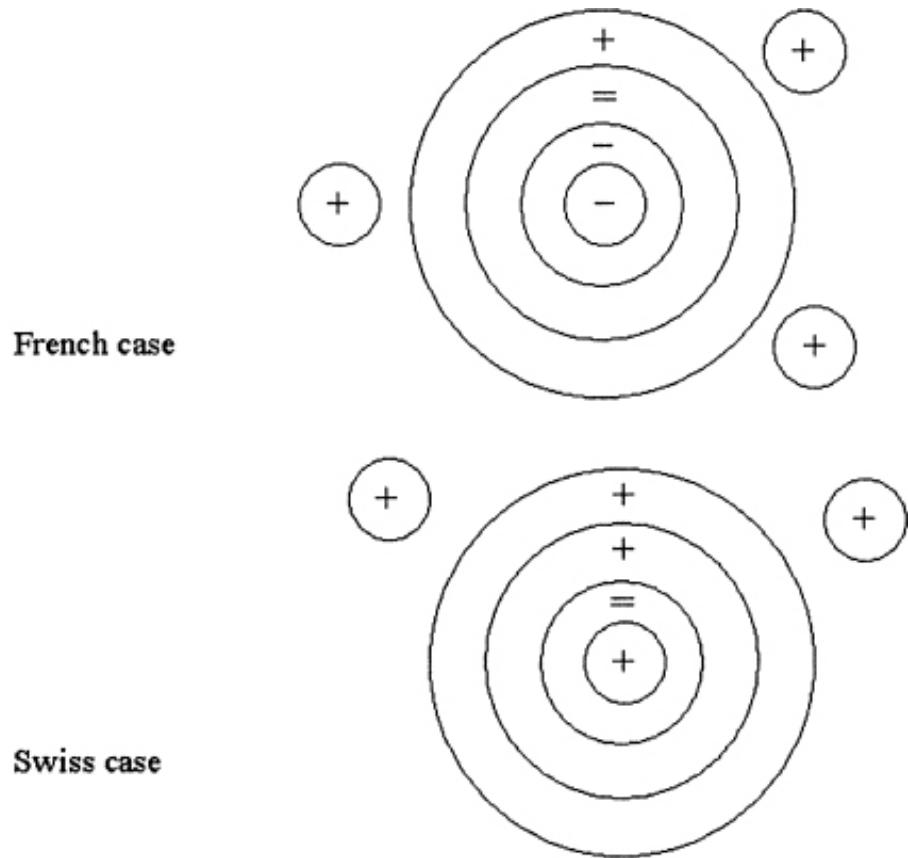
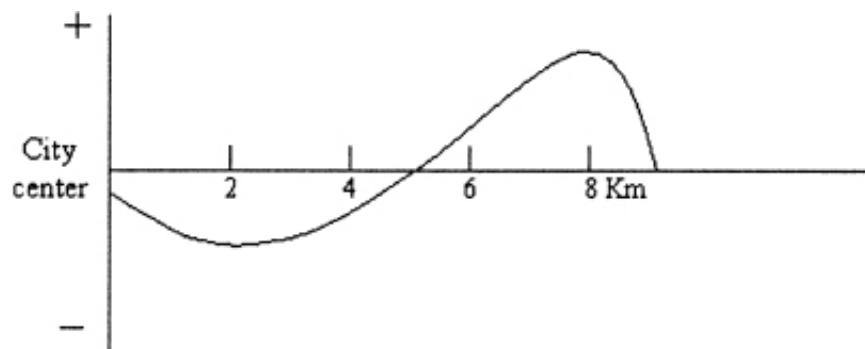
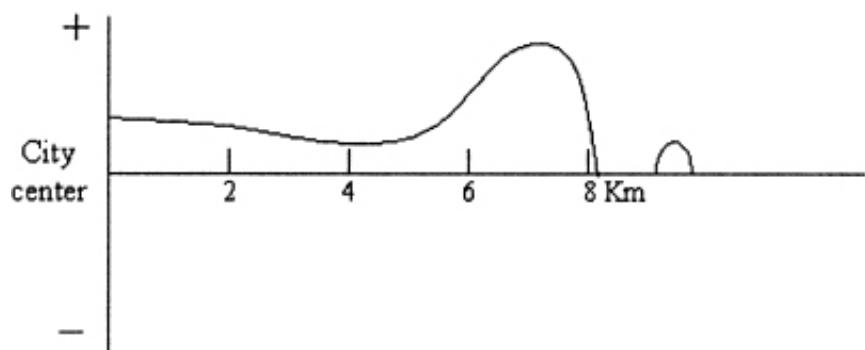


Figure 11.4 Urban sprawl and city growth in France and Switzerland



French case



Swiss case

Figure 11.5 Spatial evolution of city growth in France and Switzerland

Two Different Types of Power Structure

Since 1980 most middle-size French cities have experienced growth in the vicinity of ring roads and technopoles and decline in the centres and in the first generation suburbs typically adjacent to town centres. The Swiss experience contrasts sharply because CBDs have remained strong and have continued to grow. The persistence of these core locations is attributed to the power of the canton in guiding locational decisions.

The emerging French pattern has been produced by the dominance of central policy that is formulated in Paris leaving few powers to localities. In the final result, French policy works against existing middle-sized cities whereas the Swiss system of strong local autonomy seems to work to the advantage of middle-sized centres.

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Chapter 12

Urbanization and the Social Origins of National Policies Toward Sprawl

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Throughout advanced industrial societies, the dispersion of residence and employment presents potential problems for the governance of urban regions. Yet, as even a casual traveller through Europe and North America is bound to notice, local patterns of development in the peripheries of urban regions differ widely among nations. In much of northern Europe, for instance, a postwar pattern of urban expansion halted in the 1980s, while cities in France and southern Europe continued to disperse (Cheshire, 1994). Similarly, urban sprawl in most United States cities has far outstripped parallel tendencies in and around Canadian as well as most European cities (Goldburg and Mercer, 1986; Nivola, 1999; Sellers, 2002). Although most observers trace a large portion of these national patterns to divergent infrastructures of law and policy pertaining to land use and urban development, little systematic attention has been paid to the reasons for divergent national traditions of land use regulation. In this paper, I will argue that these traditions took definite shape in the vast wave of urbanization that swept across the Western world along with the industrial revolution of the nineteenth and early twentieth centuries. Differences in the intensity and scope of urbanization during this era, in the place of urban areas in the contemporary national political system, and in the politics of coalition-building around the control of urban form produced divergent national institutions that continue to shape urban development into the early twenty-first century.

In North America as well as Europe, a wide interdisciplinary consensus points to the events of this period as a crucible in the development of forms for urban governance and planning. As Sutcliffe (1981), Rodgers (1998) and many others have helped establish, domestic efforts toward this end

throughout Europe and North America comprised part of an international movement for political, social and economic reform within industrializing cities. What remains open to question, and even largely unexamined, is why this movement for reform of institutions for urban development produced such diverse national institutions and ultimately such divergent effects on sprawl. Histories of planning (e.g., Sutcliffe, 1981) have neglected the wider political and economic forces that help to explain these patterns. Rather than address the development of policy toward sprawl, comparative political economy has treated urbanization in relation to specific questions like the formation of urban working class movements (Katzenelson and Zolberg, 1986), the development of political party systems (Bartolini, 2000) and the emergence of corporatist arrangements (Schmitter, 1982). None of these literatures has directly addressed how the social transformations linked to urbanization itself, and the political interests that emerged from this process, affected the development of institutions for planning and urban policy.

This paper traces two ways that urbanization affected the emergence of institutions for control over land use in cities. Rapid urbanization and its consequences within urban regions gave rise to new, powerful interests in policies to control land use. At the same time, the shape of the infrastructures that emerged depended on the place of cities in the wider polity, and especially on the relation between urban and nonurban political interests. After an overview of the main national variations in planning and urban institutional infrastructures during this era, the paper will analyze how far each of these social influences affected these variations. The conclusion sketches the legacies of these earlier differences in contemporary patterns of land use regulation.

The Creation and Development of Supralocal Institutions

Across Europe and North America over the late 19th and early twentieth centuries, the main institutional instruments for the governance of urban form emerged and spread. This process differed widely among countries in at both national and local levels. Refracted through the divergent influences of subsequent periods, these differences nonetheless ultimately influenced later patterns of governance in decisive ways.

The politics of institutional development focused on the establishment of an array of tools that planners generally regard as useful for planning and regulation by public officials at the urban level. For the most part, these tools depend at least partly on application by local officials themselves. At the same time, many require either specific authorization or some other legislation at some supralocal level (whether nationally or at the level of an intermediary unit like a US state). Even when this sort of higher level institutionalization is not essential, it may still encourage and reinforce local efforts. Full institutionalization of a national practice requires both widespread local application and some form of authorization or reinforcement at higher levels.

Several sorts of institutional innovations serve to indicate the development of institutional infrastructures for urban governance during this period at higher levels of government:

- authorization of local building regulation
- authorization for regulation of land uses (for new development, for other areas, either permissive or mandatory)
- authorization of public enterprises for transportation, utilities, housing, urban development
- authorization of expropriation for public purposes
- favourable formulas for municipalities to compensate expropriation
- rules to enable financing of publicly planned construction
- public subsidies for housing
- Within urban regions themselves, local practices that develop elements of these infrastructures include:
 - local building codes, applied
 - local planning and zoning, especially when changes in preregulatory patterns of land use are mandated
 - development of municipal enterprise
 - active use of expropriation, other tools to pursue new development, infrastructure, land use protection
 - sponsorship of public housing projects

Two general features of this complex deserve special attention for purposes of historical comparative analysis. First, most depended on initiatives and institutionalization both through application within cities and through legislation at the higher levels of states. Second, two types of more general legal institutions exerted a complex influence on the politics of institution-building at both levels. On the one hand, property rights for private firms and individuals often presented a norm that had to be altered for the national legislative supports for public control over urban development to be instituted. On the other hand, general rights of local governments often had legal implications across the board for capacities to develop public instruments for control of urban form. Property rights in particular linked a variety of potential interests and political forces, from labour and employers to homeowners and small businesses, to the politics of urban form.

Across Europe and America during the late nineteenth and early twentieth century these practices spread widely. Following around 1870, the process emerged as a diffusion of innovations from the areas that initiated many of these practices, largely in Germany, the Netherlands and Switzerland. Remarkably, the patterns of innovation diverged from the centres of innovation in previous years. France had been a leading site of innovations in planning in the eighteenth century, and even in the 1850s under the authoritarian rule of Louis Napoleon had developed some of the ideas that would later spread. But by the start of the Third Republic the forefront of innovation had shifted elsewhere, and other cities would develop far more elaborate institutional infrastructures and interventions in the urban landscape.

Over the eighty years from the Franco-Prussian War to the start of World War II, the development of these institutional infrastructures followed several distinct institutional trajectories. In several instances, though not all, the patterns of institutional development shifted under the influence of the social, economic and political transformations that accompanied and followed the First World War. Taking into account both local and national institutions, we can classify these systems as *leaders* in the development of policies and institutions in this area, as *laggards*, and as *mixed cases*.

Leaders

In several countries, most of which continue to be regarded as the most successful in limited sprawl in favour of more compact urban forms, institutional infrastructures had already developed in both supralocal legislation and local arrangements at this time.

The German principalities of the Wilhelmine Empire and parts of the Weimar Republic emerged as international leaders in the development of the planning tools now associated with public control of sprawl. Building on legal authorizations for public intervention that the liberalization of the early nineteenth century had preserved, most German states provided explicitly for building regulation, land use control, expropriation, and limits on profits from land sales. Systems of municipally owned enterprises controlled much of utilities and physical infrastructure, and aimed at control of local land. Increasingly, larger cities exploited these powers, developing extensive local bureaucracies. Aggressive municipal annexation enabled regulation of growing urban regions within consolidated jurisdictions. In the Weimar period, despite a court decision that temporarily imposed greater costs for expropriation, localities to develop local planning, municipal annexations and massive new quantities of public housing.

In national legislation as well as local development of plans and institutions, the Netherlands played a similar leading role. The first national Housing Law, passed in 1901, contained both initial authorizations for expropriation and procedures for planning new or renovated areas. With extensions in 1921 and 1931, a full-fledged national framework for urban planning emerged. Already in the late nineteenth century, cooperatives had been developing new quarters of housing for workers. In the postwar period, especially with the issuance of the Amsterdam plan of 1935, major Dutch urban areas emerged at the forefront of models for movements in other countries (Robert-Müller and Robert, 1983).

By the interwar period and in important respects before, Great Britain had developed a similar role of leadership. The Town Planning and Housing Act of 1909 capped a half-century of piecemeal legislative developments that imposed procedures for urban renewal on behalf of health and sanitary concerns, instituted building regulation (1875) and established specific land use decisionmaking authorities for specific cities (Ashworth, 1954). If the Act of 1909 remained permissive rather than mandatory and applied only to new development, the larger cities had developed growing systems of planning and regulation, and planned suburbs on the urban fringe emerged as

a regular practice. Following the war, as the jurisdiction of town planning expanded, powers of expropriation widened and new subsidies encouraged public housing, town planning came into its own. During the 1920s and 1930s Britain constructed approximately as much public housing as Germany, much of it in the suburbs. British cities had also initiated widespread practices of public ownership of companies engaged in the development of physical infrastructure.

Mixed Cases

In a second group of countries, development of supralocal legislation remained mostly limited up to World War Two. At the same time, increasingly extensive local institutions developed, often with the participation of national political forces or more limited legislative enactments.

In the late nineteenth and early twentieth centuries, the UK belonged to this category. In Switzerland urban cantons and the cities within them, like Zürich, developed extensive systems for planning, municipal enterprise and building regulation, though with less of the public housing in Germany and Great Britain. At the same time, little federal law emerged around the new practices, and even cantonal law remained largely confined to authorizations dependent on local application (Koch, 1998; Walter, 1994).

In early twentieth century Sweden, Stockholm presented an unusually developed exception to the general rule of limited local or supralocal institution-building around planning. Although the national government had by 1874 already passed a Building Statutes Act to regulate municipal planning, planning in the capital city dated back to eighteenth century reconstruction after a series of fires. Already in the first years of the twentieth century, prior to the 1917 law that set the terms for expropriation of land across the country, the city had begun acquisitions and annexations of surrounding land in an ultimately successful effort to control its eventual expansion. In the postwar period national legislation remained somewhat limited even as the capital continued to build an institutional infrastructure of public enterprises, and develop land use planning. Only the consistently delayed plans for redevelopment of the central business district remained stymied (Anton, 1974; Calmfors, Rabinowitz, and Alesch, 1968).

Laggards

Laggards in institutional development took several forms. The trajectory of Canada resembled those of the Scandinavian countries and Switzerland, but developments at both local and supralocal levels remained more limited. National legislation did not emerge, and even provincial legislation highly limited. Although the main urban centres of the early twentieth century – Montreal, Toronto, and Winnipeg – developed more limited and ineffective systems of planning and little public housing compared to the leading European examples, the local governments engaged in expansive schemes for public enterprise in utilities and public transportation (Léveillé, 1978; Copp, 1979; Moore, 1979; Van Nus, 1979; Levier, 1987). These organizations would contribute greatly to postwar efforts to limit metropolitan dispersion and its effects on the inner city.

In France, despite the well-known legacies of Hausmann and Napoleon III in Paris, and more limited parallels in a few other cities, a supralocal infrastructure that supported more widespread planning was also slow to develop before World War One. Despite the Siegfried law establishing institutional forms for lower- to moderate income housing companies and the introduction of limited authorizations for natural and historic preservation, even the Haussmann schemes for redevelopment had not sprung from an integrated land use plan. Under the early years of the Third Republic, the Conseil d'Etat applied restrictions on property to limit the effectiveness of planning and to impose heavy burdens of proof on expropriation (Heymann-Doat, 1981: 12-16; Gaudin, 1983: 125-150. In the years before World War I, several efforts to introduce planning legislation failed (Gaudin, 1985: 25-40).

With the growth of legislation and a limited amount of local activity in France during the interwar era, France emerged as a country where the ambition of national legislation to carry out urban planning far outstripped the realities of local practice. In addition to the Cornudet Law of 1919, which originally required plans to be issued for all communes over 10,000 within three years, legislative initiatives between 1918 and 1928 elaborated conditions for subdivisions, other laws established more favourable conditions for expropriation and governmental supports for public housing (Gaudin, 1985, 1983; Heymann-Doat: 14-16). But the relatively small number of plans drawn up and approved under the Cornudet Law typically

had little effect on existing practices of urban land use. Even the ambitious plans drawn up for greater Paris were never carried out. The amount of housing built remained half or less than rates of construction in Germany and Great Britain, and public housing comprised less than 10 per cent of this total (Stébé, 1998: 56–57).

In the United States, institutionalization took the form of a further variation. As across Western Europe and Canada, planning and local public powers for control over land use furnished much of the fodder for early twentieth century debate. In addition to building regulation and the creation of public parks, eastern, southern and mid-western US states passed authorizations from the 1910s and 1920s for planning and zoning. Yet in the United States not only did Federal legal constraints shape the formation of zoning and planning, but the system of local regulation, professional authority and urban development assimilated those constraints into a distinctive system of local practices. The emerging institutional infrastructure, exemplified in such cases as *Euclid versus Ambler Realty* as well as other decisions that limited public authorities to regulate private property or profits from it, became incorporated as an assumed condition into the text of statutes, the operation of local business-government relations and the presumptions of emerging professional experts in the field (Rodgers, 1998, pp. 160–208). These constraints would persist and even be revived in the late twentieth century as a limitation on land use control.

The development of infrastructures of institutions for treating sprawl thus followed several systematically different paths in the formative period of large scale urbanization and industrialization in the West (Table 1) Leaders included the Netherlands and Germany, where institutions developed at the national and local level. Eventually Britain also developed national legislation to supplement and extend growing local planning activities. In other countries such as Switzerland and Sweden, more extensive institutional development remained centred in urban locales or jurisdictions. In Canada as a result of limited local or supralocal institutional development, in the United States and to some degree in France as a result of national institutional constraints based on property rights, planning and local public powers of control remained comparatively limited in scope.

Table 12.1 Development of supralocal and local institutions for control of sprawl, 1850–1935

1850–1914

1914–1935

Leaders

Netherlands Building, planning and housing law; Extensive public housing, public health law; urban renewal; more systematic municipal annexation, municipal metropolitan planning, ownership, local metropolitan annexations planning, open space protection in Amsterdam

Germany Extensive building regulation, Metropolitan planning, planning, municipal enterprise, extensive public housing expropriation, urban annexation in most at Land level late nineteenth century; mostly under provincial authorities

England National building regulation, Expansion of national (UK) authorization of planning for new planning sites and expansion; municipal new housing authorization, enterprise, extensive local planning extensive public housing initiatives, often with specific national authorization

Mixed Cases

Switzerland In some urban cantons building Sizeable public housing regulation, land use planning carried construction, rent subsidies out extensively, municipal enterprise in large cities, limited public housing

Sweden Planning legislation, limited planning, Limited annexation, local annexations, municipal expropriation authorized, enterprise and land ownership precreational planning, (mostly in Stockholm) limited public housing, Stockholm renewal

approved but not carried out

Laggards

France	Planning introduced but little carried out (Paris a partial exception); public building regulation; restrictions on expropriation; limits on rents; authorization of public housing	Mandated planning; limited controls
United States	Building regulation, annexation in many states but zoning; property restrictions limit development; expropriation also limited; park purchases, some municipal enterprise, little effective planning	Limited planning and limited public housing
Canada	Planning introduced in some provinces but rarely carried out; zoning; municipal enterprise in some cities strengthened; limited public housing	Limited planning and municipal enterprise

Source: Author

Rapid Urbanization and National Institutional Patterns

As most observers have assumed, one of the most important causes for the development of infrastructures of institutions to regulate urban development was the unprecedented growth of cities throughout much of the West at this time. Like the industrial revolution itself, however, the pace, the extent and often the character of this urban growth differed widely among the countries of Europe and North America. These variations contributed to the different trajectories of institutional development. More widespread and more intensive urbanization during this era generally gave rise to more

institutionalized infrastructures for urban governance. But urbanization alone cannot explain the variations in infrastructures that resulted, or the consequences where rapid urbanization was less widespread.

The need to address new or worsening problems in urban regions played an obvious role in this relation. Cities of an unprecedented number and size generated demands for physical infrastructure, urban services, housing and management. Rapidly expanding urban populations of poor, inadequately housed and badly served workers faced the worst difficulties, but urbanization brought new problems for even the most privileged classes. Beyond functional needs themselves, however, the political interests that mobilized around those needs were crucial to institutionalization. Various studies have traced diverse elements of the cross-national reform movement that emerged across the Western world at this time: working class movements and parties (Katzenbach and Zolberg, 1986), social science knowledge (Kloppenburg, 1988), middle-class movements for urban policy (Rodgers, 1998; Topalov 1998), and more specifically urban planning (Sutcliffe, 1981). Usually based in the urban or urbanizing areas of each country, powerful domestic interests linked to these movements usually played a crucial role in the process of institutionalization. New policies and institutions created at this time redefined and often reinforced these interests.

This broad international process is rarely uniform. Under the influence of different patterns of urbanization, it would be logical to expect that institutionalization of infrastructures for the governance of sprawl would vary. Less rapid urbanization should create fewer problems, less effective mobilization, less power for urban interests and ultimately less elaborate institutional infrastructures. By the same token, less extensive urbanization would generate less need for, and less powerful political mobilization around, institutionalization at the national level. Rapid, extensive urbanization should give rise to the biggest problems and the strongest political movements, and ultimately the most institutionalized infrastructures at both supralocal and urban levels.

National urban historical statistics furnish a rough measure of the comparative magnitude of urbanization, and thus of the extent this process of institutionalization took place. It remains impossible to separate out urbanization as a cause of institutionalization from the process of institutionalization itself. Not only do the figures for urban populations reflect the application of such tools as municipal annexations directly, but

any longer term trend in urban growth will inevitably mirror the influence of urban policies and the accompanying institutions. But even a process of urban growth that could be traced entirely to policies and institutions rather than, say, the operation of markets should still lead to the institutionalization of an infrastructure for control of sprawl.

The patterns of urbanization separate out into several types with distinct implications for the rise of urban interests. One of the most striking was common to the two countries that institutionalized two of the most opposed systems of supranational institutions at this time. In both Germany and the United States, following the rapid economic expansion associated with the similarly dramatic industrial revolutions, the number of cities grew most dramatically (Flora 1983; United States Census Bureau 2001). In Germany the number of cities over 100,000 grew from 16 in 1880 to 60 in 1940, as the urban population in the largest cities expanded more than threefold. In the United States number of large cities exploded from 20 in 1880 to 97 in 1930, as the population of the largest cities expanded fourfold. In both countries, rates of urban population growth also persisted at high rates up to the period immediately after World War One. Aggressive municipal annexation in both countries contributed to these trends. By the 1930s in the United States, the levelling off of this expansion reflects the onset of large-scale suburbanization as well as the economic slowdown of the depression. Each country had by this time established critical institutional conditions that would guide policy toward sprawl. Clearly it was not the rapidity or scale of urbanization that determined the very different institutions thus established.

With the only comparably large number of cities, but much less rapid trends toward urban growth Great Britain (represented in these statistics by figures for England and Wales only) diverged significantly from this trajectory (Flora 1983). The institutionalization of national policy here, however, resulted from a process of urban growth that followed a much earlier and more gradual industrial revolution. Already at the end of the eighteenth century, towns in the industrial regions of northern England had begun to expand, leaving the eight cities in England and Wales over 100,000 in 1850 in any country (except for the not yet unified German territories). If the expansion of larger English cities from 1800 to 1850 remained more gradual than the rates that would later transform Germany and the United States, it outstripped rates in most other countries during this time. After World War I, growth in the biggest British cities levelled off. This trend

partly reflected the success of efforts to shift new growth to planned developments in suburban communities. Even the sizeable amounts of public (council) housing built during this era consisted largely of homes built in these peri-urban areas.

Rapid urbanization could also concentrate in only a few cities. In all of the countries with smaller land areas, but even large, sparsely inhabited countries like Canada or Sweden, capital cities and no more than 3-4 others monopolized an urban expansion often even more dramatic than in Germany and the United States (Flora 1983; Statistics Canada 2001). Although usually linked to rapid industrial growth, urban transformations in these countries was also often linked to the expansion of services and administration in capital cities or regional governmental centres. In Canada and Switzerland, federalism also enabled introductions of the institutional infrastructure for urban governance to remain confined to the most urban jurisdictions. More limited urbanization produced fewer national conflicts over urban problems, and more limited national institutional infrastructures.

In a final category, France like Italy already boasted networks of larger cities at the beginning of this era (Flora 1983). But in both countries the number remained, far below the rising totals in the other larger countries, growing in Italy from 11 to 23 between 1881 and 1936 and in France from 9 in 1876 to 18 in 1936. The largest cities themselves growth only modestly over this period, less than doubling in population even as populations in other countries grew from three to nine times. In much of France as in Italy, the economic modernization associated with the industrial revolution would in many respects come only after World War Two. The more limited transformation and growth of cities created more limited urban problems and less powerful urban interests with interests in addressing those problems at the national scale. These conditions help to account for the failure to carry out national legislation locally. In each instance, this explanation raises the question of what produced national legislation at all.

Although rapid urbanization was itself partly the consequence of policies and institutions, the new social groups and economic interests that emerged from it would ultimately shape these institutions (Table 2). In the absence of this social transformation, these interests in national and local land use policy would neither mobilize nor acquire power. The policy imperatives linked to greater or lesser urban problems had parallel significance. The more extensive the urbanization, the more pronounced these concerns and the

mobilized and powerful the accompanying interests. For all of these reasons, lower overall urbanization provides ample explanation of why France remained a comparative laggard in urban policy of this era. Less extensive urbanization also explains the mixed cases of Sweden and Switzerland and the laggard status of Canada. By the same logic, rapid and extensive urbanization would seem to account for the leadership of Germany in this area. Yet major variations clearly defy this sort of explanation. Above all, the United States poses the most glaring anomaly. There, in seeming defiance of the pattern in the other countries, the most extensive and rapid urbanization produced a laggard in the development of institutional infrastructures for control of sprawl. In the Netherlands too, however, the rapid but limited urbanization corresponded more to the patterns in the mixed cases than in the other leaders. And the laggard case of Canada differs little from the two cases of mixed success.

Table 12.2 Mass urbanization and urban interests in late 19th and early 20th centuries, by national legislation

Legislative Patterns of Urbanization Patterns	Urban Interests in Institutional Development
Leaders	
Netherlands	Rapid, limited extent
	Mobilized, limited power
Germany	Rapid, extensive
	Mobilized, powerful
United Kingdom	Slow, limited extent (but previously more rapid and extensive)
	Somewhat mobilized, limited power
Mixed Cases	
Switzerland	Rapid, limited extent
	Mobilized, limited power
Sweden	Rapid, limited extent
	Mobilized, limited power
Laggards	

France	Slow, limited extent	Little mobilization or power
United States	Rapid, extensive	Mobilized, powerful
Canada	Rapid, limited extent	Mobilized, limited power

National Constituencies in the Development of Urban Policy

One place to look in order to account for these anomalies is the place of cities in the wider social and political configurations of national polities. Even constituencies in rapidly growing cities could still constitute a minority within the wider society. Even pressing urban problems would furnish less of preoccupation for a society that remained predominantly rural. An analysis of urban influences that takes these wider configurations into account reinforces much of the conclusions from urbanization itself. At the same time this expanded analysis improves upon the explanation of institutional development in such settings as the United States, it raises further questions about the sources of institutional development in this and other cases.

As the second half of the twentieth century would confirm, all Western societies at this time stood on the brink of several long-term secular trends that would transform the national political constituencies and political interests concerned with urban policy. In England as early as the eighteenth century, and elsewhere throughout most of the nineteenth and twentieth, predominantly agrarian economies gave way to manufacturing and ultimately service bases. Mainly rural and small-town patterns of settlement metamorphosed into urban and peri-urban forms. And with the decline in family farms, artisanal trades and independently run stores, large firms increasingly dominated workforces.

In general, these trends eroded several types of political constituencies potentially opposed to the establishment of institutional resources for urban governance. The institutional core of this potential opposition centred around various sorts of protections on rights to property. Agricultural proprietors, in most instances small family farmers, depended on secure rights to the land

they owned for their entire livelihood. In small towns as well as rural communities, most families also owned their own homes, and had little interest in giving up rights and resources vested in this property. Small, traditional family shops or artisans also typically sank the biggest proportion of their costs into, say, a neighbourhood or small-town store. For these groups, the transformations of property rights that was crucial to the development of infrastructures of urban governance, and ultimately the urban transformations that this governance promised to reinforce, posed immediate and direct threats. Wherever these groups continued to dominate national politics, advocates of planning and other authorizations for urban policy found themselves forced to compromise or give up ambitions for effective legislation.

Inevitably, different pre-existing regimes of property rights influenced the accommodations between these small non-urban and propertied interests and advocates of planning. Yet transformations of legal and organizational regimes accompanied urbanization in all these countries, and pre-existing institutions themselves did not dictate the outcomes. Rather, the patterns of new institutions outline in the first part of this paper corresponded to several different combinations of national constituencies.

Urban Dominance

In the leading countries of the United Kingdom and the Netherlands, national urban interests clearly stood in a position to dominate national agendas. Even if urbanization had been less rapid in the U.K. and less extensive in the Netherlands, the national development of planning at this time faced little remaining basis of opposition from the rural, agricultural, or small property-owning sectors.

In Britain, efforts to develop urban policy instruments faced a much less powerful array of non-urban or small property interests at the national scale than in any other larger country. Already in 1890, the proportion of the population living in places with populations under 5,000 had already fallen below 50 per cent (Flora 1983). Both farmers and the self-employed also remained only small constituencies, with around 10 per cent or less of the workforce (Flora 1983). The urban working class movements and middle class reformers who sought to develop systems of effective urban governance (Katzenelson, 1986; Rodgers, 1998) thus met with less resistance than they

would elsewhere. Little effective political opposition mobilized against the initial Planning and Housing Act of 1909, the expansion of planning and housing authorities during the interwar period, or the widely implemented strategy of suburban council housing that emerged at this time.

In the Netherlands, despite a larger proportion of employers and self-employed, urban interests dominated even more. The comparatively small land area of the country virtually assured that the political forces generated by rapid urbanization based in the future Randstad would confront nonurban interests of limited size and modest political clout. Even in the early 1900s the smallest places there already housed under 30 per cent of the population, and the proportion in agriculture had fallen to 20 per cent (Flora 1983). As in Britain, middle and working class movements to develop infrastructures for the governance of urban form faced little effective opposition from nonurban interests. More than in Britain, rapid urbanization hastened the development of these infrastructures.

Nonurban Dominance

In France, taking national constituencies into account highlights an additional source of the lag in development of infrastructures for planning. Here, since urbanization continued at much slower rates than elsewhere despite the presence of large cities, interests opposed to the development of infrastructures for the governance of urban form remained up to World War One in a position to impose important constraints on efforts to develop urban policy. Even throughout the interwar era, although significant legislation passed, local institutional development and implementation remained highly limited.

In the France of the Third Republic, the leading political and social constituencies posed even greater obstacles to effective urban policy than in the United States. Rural and small-town populations (in places under 5,000) significantly outnumbered residents of larger towns and cities, remaining a majority of the population into the 1930s. Over 40 per cent of the workforce remained in agriculture. And as much as 45 per cent of the workforce, including majorities in both commerce and farming, either owned their own businesses or were self-employed (Flora 1983). Especially before World War I, the combination of rural and propertied interests maintained a decisive voice in opposition to the efforts of a vocal reform movement to

develop instruments for public planning. Gaudin (1983: 125-130) attributes the stalemate in planning legislation to the decisive voice of rural elites in the indirectly elected Senate of the Third Republic, and to agricultural interests in the maintenance of property rights to reallocate rural land. It was only after the war, as wartime damage posed new challenges, rural and farm constituencies shrank and shantytowns expanded on the outskirts of Paris, that reformers succeeded in the national legislative process. Even then the Senate, where rural interests dominated, contributed to weakening the legislation. And both this legislation and the ambitious plans developed under it for the planned construction of Paris and other cities would fail to come to fruition before World War Two intervened.

Nonurban Dominance and Powerful Urban Interests

For the United States, parallel nonurban and anti-urban constituencies and priorities at the national level provide an explanation for why urban interests also failed to develop strong institutions for planning and related activities. Here, efforts to cope with rapid, large-scale urbanization in fact confronted powerful nonurban interests and agendas that would constrain the local opportunities for more extensive planning and related policies.

Although inherited institutions here furnished neither incentives nor political resources to facilitate the development of infrastructures for public control, efforts to change this system also confronted large constituencies with agendas opposed or unrelated to planning. Nonurban interests remained more dominant for longer than in the leading countries. Although nonurban populations declined, the US statistics, based on a minimum urban population of 2,500 rather than 5,000, actually indicate a significantly higher proportion of the population remaining in non-urban places. Even based on this indicator, the proportion of the population in nonurban settings only fell below half shortly before 1920. An indicator based on a population of 5,000 might not have demonstrated an urban majority until after World War II (United States Census Bureau 2001). Although the population in agriculture declined at a moderately rapid rate compared to elsewhere (United States Department of Agriculture 2001), the farm and small-town commercial sectors of the late nineteenth and early twentieth century United States remained largely in the hands of small proprietors and the self-employed. Small businesses and farmers furnished powerful political constituencies for

maintaining strong property rights against incursions on behalf of planning, public enterprises and public land ownership. Republican predominance in the party system of 1896 established an alliance between elements of these reform movements, business interests, and nonurban farmers and small businesses that would persist up to the Great Depression (Bensel, 1997). This configuration lay behind the development of property rights restrictions that continued to set limits on public prerogatives for zoning and urban policy.

Mixed Urban-Nonurban Dominance

For other countries, however, the balance of interests and constituencies at the national level into account prompts additional questions. For Germany prior to World War I, a view of national highlights some of the same obstacles that confronted efforts to develop institutions of planning in the United States. Only around the time the war arrived, and most unmistakably during the interwar period, did rural, agricultural and small propertied interests lose their predominance in the economy and society. Taking other dimensions of politics and institutions and perhaps even further conditions into account seems essential to explain how Germany emerged throughout the early twentieth century as a leader alongside Great Britain and the Netherlands.

In the Weimar Republic, the increasingly predominant urban areas and interests provided a bulwark of support for the major advances toward this infrastructure. The rural and small-town portion of the population fell below half, the agricultural workforce declined to 30 per cent of the total, and the proportion of business owners or self-employed in the workforce stood below 20 per cent (Flora 1983). But the most dramatic urbanization, and the leading role of German territories in the development of urban planning and other organizations, had emerged in the last decades of the Wilhelmine Empire. At this time as much as 60 per cent of the German population lived in rural areas or villages, and the farm workforce constituted just under 40 per cent of the national total. The development of leading institutions in Germany thus poses a puzzle. How could infrastructures for the public control of urban land have developed in the face of these predominant nonurban constituencies?

A combination of institutions and coalition-building offers a solution to this puzzle. As Sutcliffe (1981) has pointed out, local officials committed to the development of professionalized expertise generally occupied a more powerful position in the development of policy in the German state. In addition to bureaucratic forms of public and professional authority, the autocratic features of the Wilhelmine state and longstanding official legal authorities to set the terms of private property rights reinforced this position. At the same time, even a bureaucratic authoritarian regime like the Wilhelmine Empire had to reach some form of accommodation with powerful nonurban interests. Decentralized authorities for matters of planning and urban development within the empire made this accommodation more essential in some parts of the Empire than in others. In the more urbanized western German provinces like Saxony, the increasing marginality of landed and rural interests enabled innovations to develop relatively unimpeded (Richter, 1994). Provinces like Prussia, where the biggest proportion of rural eastern Germany lay, accommodation with nonurban interests was more crucial (Gramke, 1972). As larger enterprises already dominated much of retail commerce, small business owners made up a smaller proportion of the economy than in any country besides Great Britain (Figure 5). The alliance of large agricultural producers with large manufacturers shared interests in the development of cities as centres for economies of scale in consumption as well as production.

Explanations of this sort call on additional political variables beyond urban interests or national constituencies to account for German leadership. To account for other national variations necessitates a parallel attention to politics and the state.

Nonurban Dominance and Limited but Mobilized Urban Interests

In the remaining countries considered here, rapid urbanization confronted more dominant non-urban interests. Although a few cities in Canada, Switzerland and Sweden had grown at rates comparable to the highest ones anywhere else, urbanization in these countries before World War Two proved much less extensive than in Germany or in the United States. In all of these countries as in France and most likely the United States, over half of the population remained in places under 5,000 up to the eve of World War II (Flora 1983; Statistics Canada 2001). At the same time, the development of

institutional framework for planning and governance in these countries centred at the local level in a few urban regions.

Crucial links between urbanization and institutional development here took the form either of institutional authorities or of political coalition-building. Empowered under a federal system, the most urban Swiss cantons like Zürich and Geneva developed institutional frameworks for jurisdictions that encompassed single metropolitan areas (Koch, 1998). By the same token, although the more urbanized Canadian provinces of Ontario and Quebec passed limited planning authorizations, the main institutional developments there centred in the major urban areas of Toronto and Montreal. In Sweden, where most early institution-building for planning also took place locally, other means enabled the accommodation of urban interests with powerful rural ones around national legislative authorizations. The special status of the Stockholm as the national capital may have furnished at least part of the basis for the mobilization of planning around urban growth there. Over part of the interwar period, moreover, the urban Social Democratic party governed at the national level in coalition with a powerful Peasant Party that represented rural and agrarian interests (Swenson, 1991).

Only in the cases of two of the leaders, then, do configurations of interest at the national scale clearly reinforce explanations in terms of interests in urbanization itself (Table 3). For the United States, national-level formations furnish at least part of the solution for the puzzle of institutional development. For Germany they lead to another puzzle. To a degree in both of these last cases, but most markedly in Germany, and even more clearly for the other cases of mixed or lagged development, a full account of the development of institutions for urban planning and governance requires additional attention to the structures of the state and the dynamics of political agency.

Conclusion: Early Twentieth Century Trajectories and Their Consequences

The more general conclusions about how to explain patterns in the development of infrastructures of policies and institutions in areas like planning and urban development should be clear. Beyond any analysis that looks to the problems and interests that patterns of urban development itself fostered, a full account cannot dispense with attention to the configurations of

interests and power at higher instances of policymaking. Even with both local and higher levels of policymaking and institution-building taken into account, full comparative explanation of the national variations necessitates attention the institutions of the state and the politics of decision-making. As the density and complexity of institutional frameworks for urban policy have grown over the course of the twentieth century, the need to take these last elements more seriously has only increased. With the spread of urban development and the rise of new city forms in the latter half of the century, the national institutional variations that emerged over the previous period would contribute to distinct new trajectories.

Throughout Europe and North America these trajectories followed a trend of limited convergence in some respects. Urban regions became predominant as agriculture declined, and larger enterprises grew to dominance in the commercial and industrial sectors. All of these countries would develop increasingly elaborate, diversified and similar systems of public instruments for the control of urban growth. But, building not only on the institutional differences that had already appeared, but on the patterns of urban development that resulted, these countries separated out into several distinctive trajectories.

Table 12.3 National constituencies and urban interests in institutional development during late 19th and early 20th centuries, by national legislation

Legislative Patterns	Urban Interests	National inUrban Institutional Constituencies	Non-Social Development	Bases ofInstitutional Development
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Leaders

Netherlands	Mobilized, limited power	Subordinate	Dominant urban interests	
Germany	Mobilized, powerful	Partly dominant (agricultural,	Dominant urban interests or urban-nonurban coalition around planning (Territorial variation)	

		rural, but large property-owners)	
United Kingdom	Somewhat mobilized, limited power	Subordinate	Dominant urban interests
<hr/>			
Mixed Cases			
Switzerland	Mobilized, limited power	Dominant (rural, agricultural interests)	Dominant urban or nonurban interests by cantons (Territorial variation)
Sweden	Mobilized, limited power	Dominant (rural, agricultural interests)	Urban-nonurban coalition around planning
<hr/>			
Laggards			
France	Little mobilization or power	Dominant (rural, agricultural, small-property interests)	Dominant constituencies, property-based coalition
United States	Mobilized, powerful	Dominant (rural, agricultural, small-property interests)	Dominant but challenged constituencies, property-based coalition
Canada	Mobilized, limited power	Dominant (rural, agricultural interests)	Dominant constituencies, but some urban- non-urban coalitions around planning (Territorial variation)

Source: Author

Throughout Europe and North America these trajectories followed a trend of limited convergence in some respects. Urban regions became predominant as agriculture declined, and larger enterprises grew to dominance in the commercial and industrial sectors. All of these countries would develop increasingly elaborate, diversified and similar systems of public instruments for the control of urban growth. But, building not only on the institutional differences that had already appeared, but on the patterns of urban development that resulted, these countries separated out into several distinctive trajectories.

In the leaders of the earlier period, successful planning and institutions form the earlier eras led to increasingly ambitious planning and less sprawl. The Nazi regime in Germany and the wartime occupation in the Netherlands had already undertaken initial steps toward an increasingly systematic institution of urban and regional planning and land use controls. Over the thirty years following the war in both countries, national building and land use codes further institutionalized the systems of both countries. In the United Kingdom, the Town and Country Planning Act of 1947 instituted the first fully nationalized system of local land use controls. In the United States, however, this early exurban settlement would grow into an institutionalized national pattern. Efforts there to develop the same public housing, urban planning and downtown renewal as in Europe would generally contribute to the exodus of most middle class and white residents from the central cities. By the 1970s, growing suburban constituencies had created nonurban majorities in state legislatures as well as the Congress (Mollenkopf, 1983; Weir, 1996). Suburban homeowners emerged alongside the private development industry as a massive new force that reinforced the limits on land use regulation and other instruments for the public governance of urban form.

Elsewhere, where less extensive urbanization before World War Two had generated less institution-building at the local level in much of a country, the massive urban expansion that accompanied postwar prosperity presented an opportunity to catch up with the earlier leaders. In Switzerland and Sweden, where some cantons and the Stockholm region had already developed leading examples of control over urban growth, postwar institutionalization consisted largely of the diffusion of domestic examples and the establishment of national institutional structures around these precedents. In Canada, effective systems of planning emerged for the first time around the metropolitan areas of Toronto and Montreal. As elsewhere, the development

of effective controls helped prevent the emergence of major constituencies opposed to urban policy like the suburbs of the United States. In France this process proved more limited and delayed, but also took place. Up to the decentralization of planning authorities to the communal level in 1983, decisions of national officials often dominated this process. With the exception of regions like the area surrounding Paris, this process generated only limited control over urban form. By the 1990s, however, as the national government elaborated constant adaptations to the infrastructure of institutions for local control, local efforts toward metropolitan governance had succeeded better in some urban regions even as they continued to fall short in others (Sellers, 2002). The result was a patchwork of exurban regions with various relations to their central cities.

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PART III
THE UNITED STATES OF AMERICA

Chapter 13

US Population and Employment Trends and Sprawl Issues

Harry W. Richardson and Peter Gordon

Introduction

This paper has two goals. First, we examine some of the major metropolitan trends in population and employment over the past thirty years. These trends show that, despite anecdotal talk about central city revivals, suburbanization and exurbanization continue to be the dominant story in US settlement trends. Second, we make a few key observations about selected sprawl-related issues: smart growth, New Urbanism, and the growth of private communities.

US Population and Employment Trends

Growth controls and efforts to influence the patterns of settlement and development continue to gain strength throughout the United States, but with little more than a marginal impact. A variety of data sources help to establish this point. The recently released 2000 Census of Population reports a ten-year national population growth of slightly more than 13 per cent. Most of the large cities did not keep up with the national pace although most of their suburbs grew at least as fast, if not faster. Of the top 50 cities, only 13 significantly beat the national growth trend (only four in the top 20); predictably, all of these were in the Sunbelt states. None of this is really surprising because city-to-suburb and frostbelt-to-sunbelt migrations have been going on for decades. Both are explained by the lifestyle choices made by millions of households, facilitated by new technologies that are dramatically reducing communication costs, and to a lesser extent, transportation costs. Indeed, the information technology revolution has resulted in such a deep plummeting of communications costs that some commentators have challenged the view that there is a case for continued agglomeration and spatial concentration.

The details are a little too complex to reduce to one simple story. [Table 13.1](#) compares some recent metropolitan area employment trends with concurrent population trends. These are not available (unfortunately) for exactly the same geographic units. With respect to population, we note that areas outside the central cities usually grew the fastest. The same pattern is apparent for all of the size classes and geographical categories (see the bottom of [Table 13.1](#)). There were also a few exceptions: population growth in eight CBDs of the

top-20 metropolitan areas outpaced both their surrounding central cities as well as the surrounding suburbs. Yet, CBD population growth accounted for a very small share of metropolitan area growth even in these eight places.

For seven of these eight metropolitan areas, suburban county employment growth was faster than core county job growth (San Diego is not counted because the Metropolitan Statistical Area [MSA] does not have a suburban county). Almost everywhere, suburban counties added jobs at a faster rate than their core counties. Downtown (CBD) job growth data are from County Business Patterns zip code files which limit us to a three-year period (1994–1997). Also, these CBD definitions vary from the ones used to measure ten-year population growth. Yet metropolitan area job growth (County Business Patterns definitions) for the 19 areas covered for the three-year period was 8.7 per cent. Only seven CBDs grew faster.

To try to make sense of these patterns, we now focus on trends. We examine the 31-year series made available by the Regional Economic Information System (RBIS) from the Bureau of Economic Analysis (BEA, US Department of Commerce) for the 3132 counties of the US that describe population and employment and income for seven major economic sectors for all counties over the years 1969–1999. The employment data cover both full-time and part-time jobs.

We used geographic divisions that would help us to study the evolution of agglomeration economies. People may choose to live and work in clusters for many reasons. They may enjoy social interaction with others and/or they may profit from economic interactions, e.g. in markets as buyers and as sellers. Economists and others have made much of agglomeration economies as a source of economic growth because ideas are spawned and developed as a result of interactions facilitated by proximity (geographic features that contribute to connectivity also favour the subsequent spread of ideas; Diamond, 1999). Economic development and urbanization have reinforced each other over the years. Yet the operational definition of proximity continues to change. Social coordination via markets (transactions) has been facilitated when distances are short; social coordination via the exchange of ideas is also improved. The latter has both economic and community consequences. But these may be costly because clustering, if too dense, can result in congestion. The benefits of dispersal are expanded by increased connectivity, i.e., cheaper modes of moving people, goods and (especially) ideas. The marginal costs of moving the latter are now close to zero. This is confirmed by our analysis that reveals substantial decentralization, much of it away from metropolitan areas in general and especially from their cores.

We divided the 831 metropolitan counties five ways: i. the core counties of the largest (i.e. >3 million) metropolitan areas (MSAs or Consolidated MSAs); ii. their suburbs (noncore counties); iii. the core counties of middle-sized (1-3 million) metropolitan areas; iv. their suburbs; and v. those counties constituting the small (less than 1-million) metropolitan areas. All data aggregations based on political boundaries are somewhat problematic. With this in mind, we often refer to noncore areas as ‘suburbs,’ although it is clear that there are also many areas in core counties that exhibit suburban characteristics.

Table 13.1 US metro growth performance in the 1990s (%)

METRO AREA(S)	1990-2000 Pop Growth				1990-1999 Job Growth			1994-1997 Job Growth	
	Metro	Core Central City	All Other		Core CBD	Share of Metro Growth	Private Jobs Metro	Private Jobs Noncore Counties	
			CC's >100k Pop	Rest of Metro				Core CBD***	
New York–Northern New Jersey–Long Island, NY–NJ–CT–PA CMSA	8.40	9.4	0.8	7.20	10.9	1.02	8.0	9.1	7.4
Los Angeles–Riverside–Orange County, CA CMSA	12.70	6.0	13.9	14.90	5.7	0.11	7.4	21.3	-0.8
Chicago–Gary–Kenosha, IL–IN–WI CMSA	11.10	4.0	20.0	14.40	30.0	1.83	15.1	32.7	2.2
Washington–Baltimore, DC–MD–VA–WV CMSA	13.10	-5.7	-11.5	18.60	4.0*	0.12	15.7	18.0	6.0
San Francisco–Oakland–San Jose, CA CMSA	12.60	7.3	12.1	13.80	32.3	1.35	18.8	21.1	13.8
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD CMSA	5.00	-4.3	n.a.	8.40	4.9	1.24	9.2	13.9	-6.2
Boston–Worcester–Lawrence, MA–NH–ME–CT CMSA	6.70	2.6	3.8	7.50	4.7	1.00	13.3	14.1	10.1
Detroit–Ann Arbor–Flint, MI CMSA	5.20	-7.5	-4.5	9.10	2.1	0.28	14.8	24.2	-9.7
Dallas–Fort Worth, TX CMSA	29.30	18.0	22.5	37.30	28.2	0.28	33.6	40.9	-7.7
Houston–Galveston–Brazoria, TX CMSA	25.20	19.8	n.a.	29.30	7.6	0.06	27.4	43.3	1.6
Atlanta, GA MSA	38.90	5.7	n.a.	44.00	25.1	0.37	42.3	51.0	37.6
Miami–Fort Lauderdale, FL CMSA	21.40	1.1	2.0	25.20	31.6	0.70	21.5	30.6	-24.1
Seattle–Tacoma–Bremerton, WA CMSA	19.70	9.1	15.0	22.7	54.4	1.14	23.7	27.8	3.6
Phoenix–Mesa, AZ MSA	45.30	34.3	35.3	68.8	-9.1	-0.06	52.2	28.8	12.2
Minneapolis–St. Paul, MN–WI MSA	16.90	3.9	-12.2	26.2	-16.6	-1.40	24.1	31.1	9.4

Cleveland-Akron, OH CMSA	3.00	-5.4	-2.7	5.6	32.2	2.71	13.9	22.4	9.2
San Diego, CA MSA	12.60	10.1	22.9	13.9	16.1	0.78	22.4	n.a.	3.0
St. Louis, MO-IL MSA	4.50	-12.2	n.a.	7.6	-17.5	-1.44	12.5	11.3	2.9
Denver-Boulder-Greeley, CO CMSA	30.40	18.6	n.a.	34.0	51.4	0.24	40.7	51.7	10.1
Tampa-St. Petersburg-Clearwater, FL MSA	15.90	8.4	5.8	19.6	11.6	n.a.	32.7	26.1	n.a.
TOP 10 Metropolitan Areas	11.50	6.7	9.0	13.7	11.3	0.65	13.5	17.8	5.6
TOP 20 Metropolitan Areas	13.70	7.6	9.5	16.5	11.6**	0.52	17.1	20.6	8.7
TOP 50 Metropolitan Areas	14.70	9.0	9.9	17.5	n.a.	n.a.	18.4	22.8	n.a.
SUNBELT (30)	22.00	15.6	15.8	25.6	n.a.	n.a.	22.0	31.7	n.a.
FROSTBELT (20)	8.40	3.4	-2.0	11.00%	n.a.	n.a.	8.3	17.3	n.a.
FROSTBELT except New York	8.40	-0.6	-3.1	11.80%	n.a.	n.a.	14.7	21.3	n.a.

* Baltimore CBD growth = 5.1% **no CBD data for Tampa-St. Petersburg ***Defined by zip codes

Sources: 1) MSA and cities population data from www.census.gov; 2) CBD population data from E.L. Birch (forthcoming) ‘Having a Longer View of Downtown’ *Journal of the American Planning Association*; 3) REIS employment data from US Department of Commerce, Bureau of Economic Analysis; 4) CBD employment data from *Zipcode County Business Patterns*.

The nonmetropolitan counties were divided into seven groups, using the United States Department of Agriculture’s (USDA’s) 1993 Urban Influence Codes. If counties are adjacent to metropolitan areas, there is a four-way partition: adjacent to larger metropolitan areas (defined for the nonmetropolitan analysis as larger than 1 million) or to small metropolitan areas, with or without a city of 10,000-plus people. If counties are *not* adjacent to a metropolitan county, there are three types: with a city of 10,000 or more, with a city of 2,500 to 9,999, or without an urban place greater than 2,500. The first four of these nonmetro counties may be considered as exurban while the last three may be defined as rural.¹

Long-established trends in US settlement and job distribution patterns are well known, and include the following:

- i. The westward movement of population and employment, in more recent decades to the Sunbelt.
- ii. Persistent rural-urban migration of jobs and people to the cities.
- iii. Suburbanization (and, more recently, exurbanization) out of cities.

However, the more detailed analysis made possible by the huge REIS data set (over one million observations on employment alone) suggests a more complex picture. Although

only the highlights are discussed here, they are revealing. In the tables that follow, the highest growth rates in each period are marked in bold, while those that exceed the national rate for the period are framed.

Table 13.2 US county growth rates by area group, 1969–1999 (%)

Area Group	No. of Counties	Pop.	Private Emp.	Proprietor Emp.	Services	FIRE	Construction	Retail	Wholesale	Manufacturing	Transp. & Public Utilities
Metro Areas > 3 mil											
Core	13	0.52	1.25	3.07	2.96	1.45	1.20	1.14	0.38	0.79	-1.44
Non-Core	154	1.18	2.58	3.44	4.4	3.33	2.80	2.42	3.09	2.09	-0.44
1 mil < Metro Areas < 3 mil											
Core	34	1.1	2.57	3.43	4.38	3.11	2.57	2.53	1.88	2.12	-0.43
Non-Core	175	1.63	3.09	3.6	4.76	3.84	3.76	3.4	3.79	2.33	0.59
Metro Areas < 1 mil	455	1.1	2.37	2.79	3.89	2.73	2.56	2.71	2.14	1.83	-0.01
Non-Metro Areas											
Adjacent to Large MA											
with a City > 10,000	62	1.04	2.16	2.15	3.44	2.32	2.84	2.48	2.91	1.57	0.52
without a City > 10,000	122	1.22	2.43	1.80	3.90	3.01	2.94	2.37	3.33	2.05	0.85
Adjacent to Small MA											
with a City > 10,000	182	0.75	1.87	1.70	3.13	2.19	2.30	2.27	2.43	1.18	0.32
without a City > 10,000	621	0.89	2.08	1.28	3.04	2.3	2.80	2.05	2.63	1.81	0.78
Not Adjacent to a MA											
with a City > 10,000	225	0.73	2.21	1.82	3.34	2.19	2.28	2.48	2.36	1.30	0.75
with a City of 2,500 - 9,999	560	0.58	2.03	1.24	3.03	2.27	2.21	1.99	2.66	1.47	0.95
without a City	529	0.27	1.92	0.65	2.85	1.98	2.22	1.22	3.17	1.92	0.96
US Total	3,132	1.02	2.25	2.67	3.85	2.65	2.49	2.35	2.03	1.70	-0.19

* 1993 USDA Urban Influence Codes were used to determine which non-MSA group the various non-metro counties belong to; 1998 population data and 1998 MSA definitions were used to determine which counties are MSAs and which metro category each belongs to.

** Source: Calculated from 'Regional Economic Information System 1969-1999', Bureau of Economic Analysis, US Department of Commerce, May 2001.

Table 13.2 shows that much of the thirty-year population and job growth took place in the suburbs of the mid-sized metropolitan areas. The pattern held for each major sector except manufacturing which is known to have been de-urbanizing for many years (Carlino, 1985).² Manufacturing job growth was highest in the rural counties. As may be expected, wholesale employment grew along with manufacturing although it did not de-urbanize, growing beyond the national pace everywhere except the core counties of large and mid-sized metropolitan areas. All of the major sectors' growth rates in the core counties of the largest metropolitan areas lagged their national growth rates.

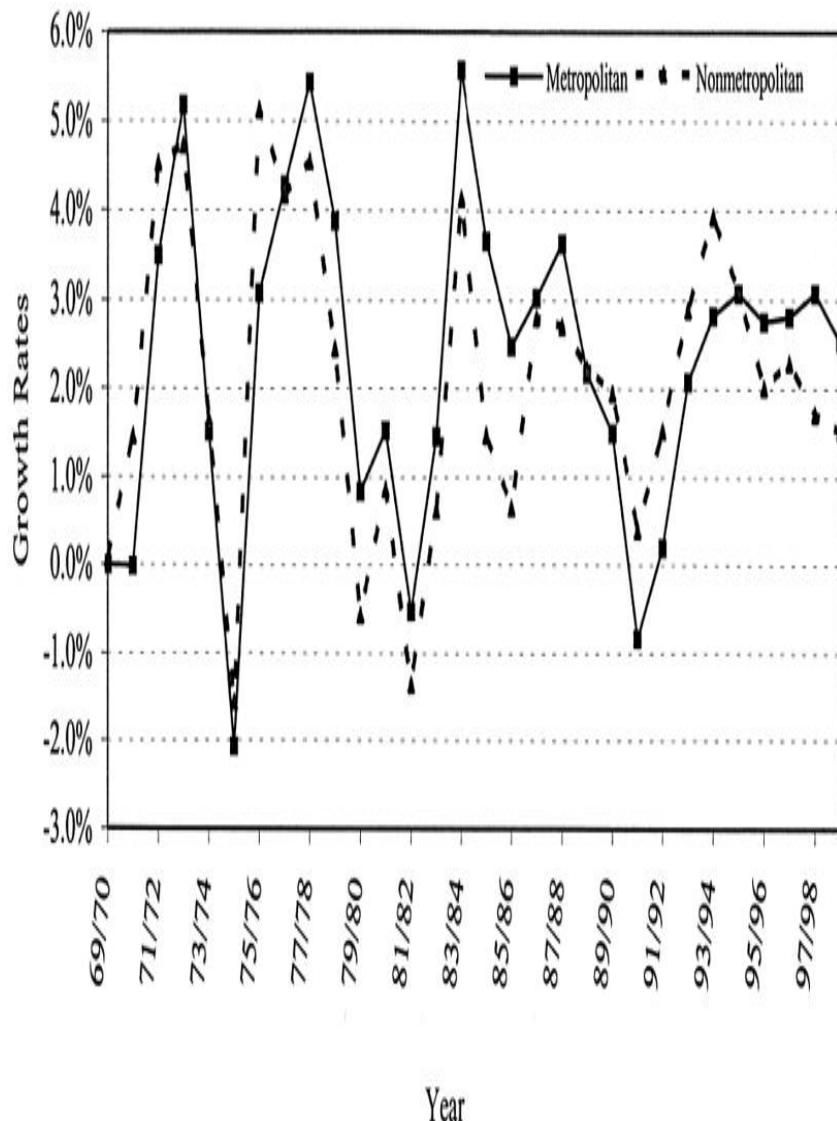
Population growth was faster than national growth in the suburbs of the largest metropolitan areas, in the core counties of the largest metropolitan areas, in the small

metropolitan areas and in exurban counties adjacent to the larger metropolitan areas. It also lagged in the core counties of the largest metropolitan areas. There is clearly a pattern of continued dispersion.

The literature on the geography of US population growth has reported various cycles of deconcentration and re-urbanization over the past 30 years. The 1970s were thought to be a time of deconcentration with nonmetropolitan growth rates surpassing metropolitan rates. This was reversed in the 1980s reported as a time of urban revival. Furthermore, many have pointed to recent years as a period of central city revitalization.

We found that there have been distinct cycles of employment growth in which, either the metro counties or the non-metro counties alternatively dominated ([Figure 13.1](#)). Applying our more detailed categorization of counties, [Table 13.3](#) shows that the most recent period, 1995–1999, continues the pattern of suburban-exurban dominance and the relative decline of the core counties of the largest metros. [Table 13.4](#) shows that the same is true for private sector job growth. Suggestions that growth controls have made a difference in recent years are not substantiated

Another recent vintage data source, the 1997 Economic Census, includes employment by place-of-work data for smaller spatial units than counties. As already mentioned, however, changes in the industrial classification system make it difficult to make inter-temporal comparisons. Looking at the 1997 data, however, shows that the top-50 central cities accounted for only 26 per cent of their metropolitan areas' manufacturing jobs. For wholesale trade, retail trade and services, the respective proportions were 32 per cent, 26 per cent and 34 per cent. In contrast, Mieszkowski and Mills (1993) report that in the 1950s 70 per cent of all metropolitan area jobs were in the central cities.



- * 1998 MSA definitions were used.
- ** Source: Calculated from 'Regional Economic Information System 1969–1999', Bureau of Economic Analysis, US Department of Commerce, May 2001.

Figure 13.1 US private employment growth rates, metropolitan and nonmetropolitan counties, 1969–1999

Table 13.3 US private employment growth rates, 1969–1999 (%)

Area Group	No. of Counties	'69-'99	'69-'76	'76-'88	'88-'95	'95-'99
Metro Areas > 3 mil						
Core	13	0.52	0.18	0.70	0.52	0.59
Non-Core	154	1.18	1.07	1.21	1.19	1.25
1 mil < Metro Areas < 3 mil						
Core	34	1.10	0.89	1.20	1.19	1.02
Non-Core	175	1.63	1.84	1.49	1.67	1.63
Metro Areas < 1 mil	455	1.10	1.47	1.01	1.10	0.73
Non-Metro Areas						
Adjacent to Large MA						
with a City > 10,000	62	1.04	1.17	0.92	1.18	0.97
without a City > 10,000	122	1.22	1.47	0.95	1.26	1.50
Adjacent to Small MA						
with a City > 10,000	182	0.75	1.25	0.58	0.69	0.51
without a City > 10,000	621	0.89	1.27	0.66	0.89	0.91
Not Adjacent to a MA						
with a City > 10,000	225	0.73	1.30	0.56	0.69	0.31
with a City of 2,500 - 9,999	560	0.58	1.23	0.30	0.54	0.38
without a City	529	0.27	0.74	-0.06	0.29	0.36
US Total	31,322	0.73	1.30	0.56	0.69	0.31

* 1993 USDA Urban Influence Codes were used to determine which non-MSA group the various non-metro counties belong to; 1998 population data and 1998 MSA definitions were used to determine which counties are MSAs and which metro category each belongs to.

** Source: Same as [Table 13.2](#)

Table 13.4 US population growth rates, 1969–1999 (%)

Area Group	No. of Counties	'69-'99	'69-'76	'76-'88	'88-'95	'95-'99
Metro Areas >3 mil						
Core	13	0.52	0.18	0.70	0.52	0.59
Non-Core	154	1.18	1.07	1.21	1.19	1.25
1 mil < Metro Areas <3 mil						
Core	34	1.10	0.89	1.20	1.19	1.02
Non-Core	175	1.63	1.84	1.49	1.67	1.63
Metro Areas <1 mil	455	1.10	1.47	1.01	1.10	0.73
Non-Metro Areas						
Adjacent to Large MA						
with a City >10,000	62	1.04	1.17	0.92	1.18	0.97
without a City >10,000	122	1.22	1.47	0.95	1.26	1.50
Adjacent to Small MA						
with a City >10,000	182	0.75	1.25	0.58	0.69	0.51
without a City >10,000	621	0.89	1.27	0.66	0.89	0.91
Not Adjacent to a MA						
with a City >10,000	225	0.73	1.30	0.56	0.69	0.31
with a City of 2,500–9,999	560	0.58	1.23	0.30	0.54	0.38
without a City	529	0.27	0.74	-0.06	0.29	0.36
US Total	3,132	1.02	1.12	0.98	1.04	0.93

* 1993 USDA Urban Influence Codes were used to determine which non-MSA group the various non-metro counties belong to; 1998 population data and 1998 MSA definitions were used to determine which counties are MSAs and which metro category each belongs to.

** Source: Same as [Table 13.2](#)

Selected Sprawl Issues

Overview

Urban sprawl has become a strongly pejorative term among urban analysts.³ The term remains vague and lacks specificity. Academic critics presume market failures and want people to live at higher densities, but never say how high. A key problem is that private mobility is the near universal choice and, as always, settlement patterns respond to the dominant modes of transportation. Dispersed settlement patterns, in turn, increase the demand for personal transportation, and so forth.

If there are significant resulting externalities, these can be dealt with directly without contravening lifestyle choices. However, there is a widespread political aversion to the use of market mechanisms because rationing via the price mechanism challenges the natural impulse of many politicians to be seen as progressive redistributors. They, therefore, tend to avoid pricing at almost all costs.⁴

This description of household choice says nothing about the locational preferences of industry. Yet, the industry preference for high-density facilities has also been waning. Once tied to rail yards, seaports or other transhipment points, firms can now choose from a wider array of sites given the ubiquitous access made possible by the widespread use of trucks on the extensive highway network. Declining communications costs have reinforced these trends. The inter-firm agglomeration economies that were once available only within areas of close proximity to other firms are now available over a much larger spatial range. The various centrifugal pulls on firms and residences are complementary. Because of this, households do not have to accept wage reductions in order to live in the suburbs, as the standard urban economics model predicts. In any case, that model fails to explain much about contemporary metropolitan life; for example, recent movers have cited housing-related over work-related reasons for moving, by a ratio of better than 3:1 (51.6 per cent over 16.2 per cent), and only 3.5 per cent reported moving in order to improve their commute.

We have argued elsewhere (Gordon and Richardson, 2000) that more than a quarter century of plans and policies to promote higher-density settlement and to 'get people out of their cars' has borne little fruit. As the dispersion of jobs and people continues, settlement densities and transit ridership both continue to decline in the vast majority of places. As for transit, suffice it to say that between 1990 and 2000, transit boardings per capita fell in 33 of the 46 largest US metro areas.⁵ Nationally, transit's share of commuting trips remained about the same, 5.2 per cent in 1990 and 5.3 per cent in 2000 (it was 13 per cent in 1960). Almost \$400 billion in public subsidies since the mid-1960s have not made a difference.

Migration involves both 'push' and 'pull' forces. While it is well known that employers and employees have been attracted to places where rents, taxes and crime are lower, they have also been avoiding land use controls that severely diminish their property rights. Consider the three major migrations that characterize post-WW II America: i. Frostbelt-to-Sunbelt; ii. into suburban and exurban communities; and iii. into private communities. In the past 30 years, the Sunbelt states (roughly defined as the West and South census regions) have gained 70.5 million people (168.2 million in 2000, up from 97.6 million in 1970; 72 per cent growth while the US population grew by 27 per cent); the suburbs have gained 60.2 million (135.8 million in 1999, up from 75.6 million in 1970; 80 per cent growth) while private communities have gained 47 million residents (almost all of them added since 1970; Treese, 1999). There is, of course, substantial overlap in the three categories of migration, but the last is most striking. People have been moving to private communities where rules of property must pass a market test and to peripheral locations that usually lack long-established and well polished political machines. All this occurred while political participation, as measured by voter turnout in the United States, was falling (55

per cent of the voting age population voted in the 1972 presidential election while only 49 per cent did in 2000). In modern America, exit trumps voice.

Not only are there ambitious plans to reverse established settlement trends but there are also claims that the reversal has already begun.⁶ As demonstrated above, the most recent data suggests that the claim of a reversal is dubious. We discuss later how minimal local government involvement in land markets might be achieved. At a time when the vitality of market-driven allocations is widely appreciated, more than at any time within memory, many States are moving closer to centralized land use planning and growth controls that severely limit private property rights.

The favoured lifestyle preferences in the United States are increasingly shared abroad. Suburbanization has become a dominant settlement trend not just in the United States, but also in Canada, Europe and Japan. Wendell Cox (www.puplicpurpose.com) reports that since the 1950s, Paris has suburbanized as much as Philadelphia and that similar transformations are underway in Stockholm, Toronto, Tokyo and other places. These are all cities that have the transportation systems and land use controls that are the dream of US planners. Most people's preferences regarding residential lifestyles are clear and strong enough to overcome the various policies designed to overcome them, both here and abroad. These facts undermine the claim that US development patterns are the response to pro-low density US policies.

Smart Growth

'Smart growth' is the latest buzzword, and somewhat meaningless given that no one would support a strategy of 'dumb growth.' So, here we will go back to its origins: the 'smart growth' legislation promoted by Governor Parris Glendenning in the State of Maryland. The Maryland legislation has six components: i. the designation of smart growth areas as priority areas for development, but with an underwhelming net density target of 3.5 units per acre; ii. the Rural Legacy Act, which makes provision for preserving agricultural land via transferable development rights and purchase of development rights mechanisms (Bae, 2000); iii. an unusual feature is the incentive to live near work, a \$3,000 State tax credit without income limits; iv. a brownfields revitalization plan; v. a job creation program by the use of tax credits; and vi. most important of all, it represents a major shift from planning regulations (the typical growth management approach) to market incentives. This is perhaps the major difference between what has happened in Portland, Oregon, and in the State of Maryland.

The literature on 'smart growth' is becoming too large to be reviewed here. Hence, we limit our discussion to some brief observations and a personal assessment of what smart growth means.

Smart growth appears to imply an updated mix of growth management techniques: top-down designation of desirable future development patterns (Staley, 2001, calls these 'end-state visions'); urban growth boundaries; concurrency agreements (to ensure that infrastructure provision keeps pace with development); densification strategies to make cities more compact, such as an emphasis on infill projects; measures to restrain

automobile use and promote transit and non-motorized travel modes; and citizen participation (see Holcombe and Staley, 2001; Cox and Utt, 2001; Shaw and Utt, 2000; and Burchell *et al.*, 2000 for more extended discussions).

The last of these characteristics (citizen participation) is very important. Probably, this is the force most responsible for the spread of smart growth ideas throughout the country, facilitated by e-mail, listservs and other information technologies. From one perspective, this might seem desirable as a democratization of top-down planning. However, the rational ignorance model of political behaviour highlights a darker side: ‘citizen participation’ often becomes a cloak for activist interest groups while most people sit on the sidelines, taking little notice. The exception is when NIMBY opposition objects to more compact development, usually on traffic generation grounds. In such cases, a struggle can develop between neighbourhood NIMBYism and metropolitan-wide smart growth protagonists, with the outcome uncertain. These conflicts occasionally emerge, but in many cases (e.g. Portland, Oregon, Maryland) the vast majority of both residents and public officials appear supportive of smart growth ideas.

Another critical dimension of smart growth is its cooption of the developer community. It has encouraged developers to adopt more pro-environment stances. These may include a willingness to compromise on the scale of a project or an agreement to pay mitigation fees for environmental disruption or additional traffic. In some cases, it can be profitable for the developer because higher-density projects may yield significantly higher profits per unit. The ‘if you can’t beat them, join them’ philosophy can be a powerful inducement to cooperate.

Portland Metro’s actions embody many elements of the smart growth strategy. On the other hand, although a few Southern California cities, especially in Ventura County, have passed smart growth ballot initiatives, most jurisdictions are relatively favourable to development. However, citizen participation (i.e. interest group) efforts have slowed down major projects such as the Playa Vista project in Marina Del Rey near the ocean and the Ahmanson Ranch project in the outer reaches of the San Fernando Valley to a snailpace, if not a standstill.

New Urbanism

Another important sprawl-related issue is New Urbanism, an approach to development patterns primarily advanced by architects, such as Peter Calthorpe and Andres Duany. The contents of a New Urbanist agenda vary somewhat, but a typical list of prescriptions might include the following:

- i. promotion of mixed neighbourhoods in terms of use and populations;
- ii. providing transportation alternatives to reduce automobile dependence;
- iii. infill development rather than peripheral expansion;
- iv. priority to public and open spaces and to community institutions to foster communitarianism;

- v. affordable housing, facilitated by a jobs-housing balance strategy;
- vi. farmland preservation;
- vii. design principles to emphasize local cultural heritage, climate and ecology;
- viii. neotraditional architectural and street layout principles (e.g. front porches, limited setbacks, alleys, accessory apartments, block metric streets with traffic calming elements); and
- ix. regionalism and revenue sharing.

A cynical view of New Urbanism might regard it as pie-in-the-sky social engineering based on a false diagnosis of society's urban problems, an excessive faith in the ability to change the world, and the prescription of policies that are difficult to implement. David Harvey has dismissed the approach as 'spatial determinism,' by which he means the application of physical planning solutions to social and economic problems.

Certainly, there are many question marks about the effectiveness of New Urbanism. Despite the proliferation of New Urbanist projects (some of them masquerading in the form of developments a little higher density than the conventional norm), the durability of capital means that, even in the long run, the impact on metropolitan America will be minimal; most of our built environment is already in place. Even new developments are going to deviate substantially from the New Urbanist mold, because surveys have repeatedly shown that more than 80 per cent of households desire a single family home with a private yard (also, average dwelling sizes have increased while average household size has declined).

Farmland preservation objectives are often used as a rationale for the compact development favored by New Urbanists. However, this ignores the decline in agricultural land since the 1930s and the sharp rise in productivity (especially via a shift to more land-intensive crops). Also, agriculture remains the most polluting economic activity (i.e. \$173 billion water pollution damages). Yet another aspect is the promotion of mixed land uses. Certainly, at the macro-spatial level, there has been little progress here. The concept of 'self-containment' (implied by more jobs-housing balance) is a flawed strategy that could result in more commuting rather than less. It remains problematic how many jurisdictions will be willing to make sufficient changes in the zoning ordinances to facilitate mixed uses. However, at the micro-spatial scale, there have been some interesting examples, e.g. live-and-work row houses in Orenco Station and Fairfield Village, Portland, among other places.

The Congress for New Urbanism has always professed ambitious equity goals (e.g. residential mixing, affordable housing, narrowing of central city-suburban incomes), but little has been achieved in New Urbanist communities. On the contrary, New Urbanism house prices tend to be up to 25 per cent higher than in other developments (Eppli and Tu, 1999). The in-fill developments in the central city that might attract a more modest income clientele tend to be small and rare. The more common type of development takes the form of high income, racially segregated communities on the metropolitan periphery. Similarly, the communitarian arguments in favour of New Urbanism do not seem very strong, despite the claims of providing a better environment for children (not very many live in New Urbanist communities), opportunities for 'aging in place' (but baby-boomers

predominate), and a lower degree of automobile reliance (but automobile ownership rates and vehicle miles travelled are little different). Most trips remain external to the community, public transit projects have not been implemented, there could be more auto trips rather than less, and on-site shops are often beyond walking distance for many residents.

Several New Urbanist developments have received considerable attention: Laguna West, near Sacramento, California; Kentlands, Maryland; Seaside, Florida; and Celebration, Florida. Laguna West is a poor example: many large lots, cui-de-sacs, few traffic-calming measures, and a race-track arterial road cutting through the community. In the centre of the development, there is a very large and barren park, often deserted. There are few jobs (primarily at an Apple facility) and the shopping centre is small, half-empty and even lacks a supermarket. The development is riddled with bus stops and shelters, but bus service is very infrequent and poorly patronized. There is little social interaction among households except within the individual cui-de-sacs the well attended concerts in the park. The population is high-income (45 per cent above the regional average) with high automobile ownership rates. On the positive side (as in other New Urbanist developments, there is a variety of housing types (e.g. single family homes, duplexes and a senior citizen apartment complex). Also, the dwellings often contain New Urbanist design elements, e.g. front porches and garages at the back. Kentlands, Maryland, is perhaps one of the more successful New Urbanist communities with extensive open space and landscaping that even attracts nonresidents. However, this very attribute makes it very land-intensive with a gross residential density of less than 3 dwellings per acre. Seaside, Florida, one of the first New Urbanist communities (and the backdrop to the movie 'The Truman Show'), is a very high-income development (prices for a modest unit in excess of \$600,000), mainly of second homes. The most interesting of the New Urbanist communities, by far, is Celebration, Florida, a creation of the Disney Company. This development contains some signature 'public' buildings designed by some of America's most well known architects, it remains privately owned, and the Disney Company continues to retain control rather than the Homeowners' Association. There are strict code controls, such as window treatments, house paint colours, and restrictions on landscape and yard contents (e.g. no children's slides or garden toys). Nevertheless, most of the residents seem to like the development, perhaps because the codes sustain property values. The major complaint is that the town centre businesses cater more for tourists than for residents.

To sum up, it is unlikely that the proliferation of New Urbanist communities is going to make much difference in terms of overall population absorption. Certainly, it is difficult to envisage their relevance to the amelioration of central city problems. Another, very different issue, is that the New Urbanist discussion has contributed little to the broader analysis about the dissipation of agglomeration economies as a result of the impacts of the information technology revolution. A major reason for this is that New Urbanism ignores economic development issues because of a naïve belief that social problems are remediable by architectural and design prescriptions.

Private Communities and the Exit Option

Property owners demand property rules. In real estate, spontaneously developed property rules in the US, usually in the form of restrictive covenants, pre-date municipal public zoning codes by many years. Private zoning is now making a major comeback because the public rules of property in the era of environmentalism have increasingly diminished property and development rights by extending standing to a large number of 'stakeholders'. The rise of environmental controls and the revival of private zoning have both developed in parallel fashion since the early 1970s.

In the past 25 years, more than 40 million Americans have moved into private communities. These are places guided by rules of governance (Covenants, Conditions and Restrictions; CC&Rs) that are similar to neighbourhood zoning. In parallel to these Common Interest Developments (CIDs), there has been a rapid expansion of large shopping centres and industrial parks that also include the private delivery and maintenance of public goods and services. These developments are more a response to policy failures than to market failures. Neighbourhood quality is a collective good that zoning boards rather than neighbourhood stakeholders have typically transacted with developers. Not surprisingly, alternative forms of governance have become much more attractive.

There is, of course, also a 'voice' response as an alternative to the 'exit' reaction. Realizing that neighbourhood rights are being transacted between zoning boards and developers, residents in established neighbourhoods have felt left out and have often taken the position that 'no deal is the best deal'. The NIMBY (Not In My Back Yard) reaction is now widespread. Combined with the migration to private communities, it is symptomatic of the loss of property rights that many owners perceive.

Foldvary (1995) has noted that developers supply 'public' goods in response to their capitalization in land values and rents. Hence, these are 'territorial' goods. It is a market supply response that helps to explain the CID phenomenon. Finally, this development has been a benefit to financially-constrained local governments.

All these views reflect a Hayekian evolution of market institutions, a decentralized response to the problems of managing neighbourhoods and communities. It is ironic that this is happening at a time of widespread advocacy for enhanced top-down land use planning in the name of 'smart' growth, growth management, statewide land use planning, etc. The regulators typically claim to mitigate the effects of 'uncontrolled' and 'unplanned' growth. However, CID planning is bottom-up rather than top-down. Hostility to property rights largely emanates from the environmental movement that too often ignores a common reaction; people often decamp from places where the price system, property rights and the quality of public services are suppressed. In the United States, more and more are choosing exit over voice, moving into private communities and away from the influence of the regulators. However, in spite of the fact that many of these private communities are sprouting up in the suburbs, they are often built at a higher density than the conventional subdivision so they should not be regarded as a pro-sprawl mode of development.

Conclusions

Institutions matter to human welfare and they are endogenous. This insight, most associated with the writings of Hayek, is hard to test because our empirical tools work best when we can agree on what is exogenous. This paper presents no convincing test results. Rather, we document settlement trends that are consistent with the story. The return to private rules of land use is a market-driven institutional change.

The same can be said of the accompanying move to the suburbs and exurbs. Rauch (1994) and Olson (1982) suggested that newer governments are less likely to be encumbered by the claims of special interests and, therefore, less likely to engage in predatory activity. Moves to the suburbs, then, can be associated with more than the impulses usually cited (the search for cleaner air, lower taxes, more space, less crime, better schools, etc.). Suburbs also contain the newer cities, the ones with governments less likely to be prompted to extend standing to large numbers of ‘stakeholders’ at the expense of property owners.

Tiebout (1956) discovered a market for local public goods by pointing out that people ‘vote with their feet’, making choices between the offerings of various local governments, and evaluating their voice and exit options and strategies. Noting that the enjoyment of preferred public goods is capitalized in the value of land, that their ambit is usually limited over some well defined geography and that there would be more of a supply-side response by private owners than by public officials, Foldvary (1995) suggested the existence and the importance of ‘territorial goods.’ This not only undermined the traditional market failure discussion of public goods; it turned it upside-down. Rather than markets failing, demand and supply in combination facilitate exit and choice. The CID phenomenon bears all this out.

It also highlights how policy failures (predatory conventional governments) prompt an ameliorating institutional change. The developers of private communities do more than supply public goods, they also establish and market the rules for their governance. Consumers purchase the entire package, suggesting that the rules have to pass a market test (Boudreax and Holcombe, 2002).

Even these transactions take place within some system of public sector rules. Olson (2000) described them as *market-augmenting*. These are much more likely to be found in suburban or exurban jurisdictions. Competition and exit reinforce each other.

If markets determine the highest and best use of land and if market-compatible institutions emerge that best manage it (including common properties, roads and other infrastructure facilities), what is left for local government to do? Holcombe (2001) and Pennington (2002) have suggested that land markets be freed; all that would be left for top-down planners is the planning of major infrastructure trunk line systems. We are not at this point yet. But without reform the exit option becomes increasingly attractive.

¹ Spatial economic analysis is usually constrained by data problems. The analysis in this paper is based on County-level data. The discussion would clearly benefit from data for smaller spatial units. But these are only available sporadically, for example, from the decennial Census and or from the quinquennial Economic Censuses. County Business Pattern data at the zip code level are available on an annual basis but only since 1994 (see Glaeser and Kahn, 2001, for a use of zip code data with similar results to those found in this research). The zip code files offer no sectoral detail and less coverage than

the REIS data used in this paper (for example, nonfarm proprietors are absent from the CBP totals). Moreover, they suffer from numerous zip code redefinitions, making them much harder to use. Finally, the recent change in industrial classifications from SICs to the NAICS (North American Industrial Classification Scheme), and the difficulty of constructing correspondence tables, limit investigations (especially time series analysis) that require sectoral detail.

² In 1999, manufacturing led all sectors in the volume of ecommerce shipments (<http://www.census.gov/estats>).

³ DiLorenzo (1999) includes a partial list of some of the hyperbole, including ‘virus’, ‘insane’, ‘destructive’, ‘nightmarish’, ‘menace’, ‘cancerous growth’ and Christine Todd Whitman’s ‘This time the enemy isn’t the Soviets, but sprawl.’

⁴ The *New Yorker* (March 18, 2002) cited a recent presentation to a neighborhood group by a representative of the City’s Department of Environmental Protection, project manager Rick Gunthorpe: “There are many activities you can do personally to conserve water,” he said, and went on to explain that there are three major water-shortage designations: drought watch, drought warning and drought emergency. Currently, he said, we are in a drought warning, which means that, for example, when washing your car you must use a hose with a self-closing nozzle. ‘What’s a self-closing nozzle?’ asked one of the attendees ... ‘What’s a self-closing nozzle? That’s a good question,’ Gunthorpe said.’

⁵ <http://www.publicpurpose.com>. Pucher (2002) reports a ‘renaissance’ of public transit use in the late 1990s. However, his analysis measures the change from trough to peak, and is driven by the New York experience (obviously an outlier) that accounts for about one-half of the national increase in transit use between 1995 and 2000.

⁶ This, of course, contradicts the alarms over declining densities.

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Chapter 14

Urban Containment American Style: A Preliminary Assessment

Arthur C. Nelson

'The Lord said to Moses ... Command the people of Israel, that they give to the Levites ... cities to dwell in; and pasture lands round about the cities ... The pasture lands of the cities ... shall reach from the wall of the city outward ... all around. The city shall be in the middle.'

Numbers 35: 1-5

Introduction

Urban containment is an attempt to confront the reasonable development needs of the community, region, or state, and accommodate them in a manner that preserves public goods, minimizes fiscal burdens, minimizes adverse interactions between land uses while maximizing positive ones, improves the equitable distribution of the benefits of growth, and enhances quality of life. At its heart, urban containment aims to achieve these goals by choreographing public infrastructure investment, land use and development regulation, and deployment of incentives and disincentives to influence the rate, timing, intensity, mix, and location of growth. Broadly speaking, urban containment programs can be distinguished from traditional approaches to land use regulation by the presence of policies that are explicitly designed to limit the development of land outside a defined urban area, while encouraging infill development and redevelopment inside the urban area.

Like all policies set on changing the status quo, urban containment policy has its champions and detractors. An exhaustive list of different views is beyond the scope of the present study but some general characterizations can be made. Proponents argue that containment will do a better job of preserving open space, widening transportation options, improving accessibility,

integrating the races, and enhancing incomes than the status quo. Opponents may concede some points but argue that containment raises housing prices, reduces location choices, and generally reduces quality of life. Who is right? Probably both.

The purpose of this chapter is to characterize generally American-style urban containment and compare selected metropolitan areas with and without containment for their differences over time in selected, measurable outcomes. This is a preliminary assessment and is not entirely conclusive. Much more work needs to be done to compare outcomes to urban containment relative to the status quo.

Overview

The idea of containing urban areas is not new. Containing the population within walls was viewed in biblical times through the 19th Century as a means of defending cities and incidentally preserving farmland to help feed the people. Technological improvements – chiefly the automobile and telephone combined with farm mechanization, public health concerns about overcrowding, national defence concerns favouring deconcentration, cultural preference for space, and burgeoning population growth broke down the proverbial walls resulting in people spreading – some say sprawling – out from urban centres. This has purportedly created several problems such as loss of open space, increasing air pollution, worsening social segregation, increasing automobile dependency, declining economies of agglomeration leading to lower economic performance, and overall declining quality of life.

In response to concerns about contemporary development patterns, some American states and metropolitan areas have attempted to contain the outward expansion of urban development. Although the idea of urban containment is not new in America – some New England townships in the 17th Century forbade homes from being built in the nearby farmland – its modern form arose only as recently as the late 1950s. Lexington and Fayette County, Kentucky, is credited with being the nation's first effort to contain urban sprawl, chiefly by limiting development within an urban service line and preventing urban-scale residential development in the Bluegrass area around. Today, one can fly over this part of Kentucky to see development clustered in

the centre of Fayette County with open spaces surrounding Lexington but traditional urban sprawl in the surrounding counties.

From this modest beginning came statewide urban containment in Hawaii, upon its admission into the Union. Hawaii is a natural place to contain urban development, whether through policy or natural features. Although it is the nation's first statewide urban containment effort it is not considered a mainstream example because of its location and the fact that most of the land area is not available for development because of terrain and ownership patterns.

During the 1970s, urban containment emerged in a few more metropolitan areas, chiefly Miami-Dade County (Florida), Minneapolis-St. Paul (Minnesota), Boulder (Colorado), Sarasota (Florida), and Sacramento (California), and in one state – Oregon. Florida's growth management legislation in the middle 1980s enabled local governments to adopt various forms of urban containment strategies although few have. Washington State adopted Oregon-style containment laws in the early 1990s and applied it to the most urbanized counties (all counties west of the Cascade mountains and counties with metropolitan statistical areas in the east).

Beginning in the 1970s and continuing through the rest of the 20th Century, numerous metropolitan areas saw individual local governments pursue containment on their own – chiefly throughout coastal metropolitan California. What less than half a century ago was but one clear example of urban containment in metropolitan America, our research has revealed that more than 100 metropolitan areas have at least one example of metropolitan-wide or local government containment. Examples are not limited to areas of burgeoning population growth – Sioux Falls, South Dakota has one of the oldest programs.

With urban containment gaining momentum, it is time that we ask: what difference does containment make? That is the purpose of this chapter.

Urban Containment American Style

To American planners and scholars, Great Britain offers the quintessential example of urban containment and the leading work on British style containment is *The Containment of Urban England* (two volumes, 1973), Peter Hall, *et al.* British-style containment is achieved through nationalization

of development rights outside urban development stoplines through a compensatory scheme. Within the stoplines, urban development is facilitated through infrastructure investment, large-scale publicly-financed renewal of underused urban land and brownfield sites. A cornerstone of the British approach is exacting financial and other concessions on developers who are successful in extending stoplines outward into greenfields (Grant 1999).

Americans are no less adept at creating institutional mechanisms to guide growth (see DeGrove 1983, 1992; Knaap and Nelson 1992; Nelson and Duncan 1995; Porter 1997) but what is lacking usually is the will to achieve containment through purchase of development rights to open spaces beyond urban areas (with a few exceptions). American-style urban containment is different from Britain's, and really not consistent across the country. Let us review what we find to be the most prevalent styles of American urban containment: submetropolitan, unbounded metropolitan, and bounded metropolitan. There is another form of containment that needs to be considered: naturally contained. Perhaps the best-known example is Los Angeles, which is hemmed in by an ocean, mountains, deserts, and vast public ownership of land.

Submetropolitan

This is the earliest and probably most prevalent form of urban containment. It occurs where one local government, usually in a rapidly growing region, wishes to shape development coming to it in ways different than is occurring there and elsewhere. A notable example is Petaluma, California, that launched its urban containment effort in the early 1970s. Then at the edge (but now clearly within) of the San Francisco metropolitan area, Petaluma sought to control the timing and form of development that it would accommodate. The problem facing Petaluma was its inability to work within a metropolitan-wide framework to guide development because there was no framework. It estimated that its regional fair share of new residential development averaged about 500 or so units annually and set about to guide how that development would occur. Through cooperation with Sonoma County, Petaluma limits new development to its urban growth boundary. Only development meeting its criteria (such as mixed use and mixed income) is permitted. No development is allowed in the open spaces surrounding Petaluma because of the county's large-lot zoning and septic system regulations. The administrative complexity

of Petaluma's approach rivals that of Great Britain albeit at a much smaller scale and without compensation.

Even more complex and much broader in scope is Montgomery County, Maryland, north of and adjacent to Washington, DC. This countywide effort directs development into clearly definable urban centres (most with direct access to the Washington Metro rail line), requires residential development to include mixed income units, creates strong incentives for mixed use development, and prevents development on less than 25-acre (10-hectare) lots in the countryside. It also includes a transfer-of-development rights program wherein farmers in 'sending' areas can sell one such right for every five acres they own to a developer who can then increase residential density in 'receiving' areas by one unit.

Many more examples of this style of containment exist, and it is the most prevalently-found of the three. Notable examples include the pioneering effort by Lexington-Fayette County, Boulder, Sioux Falls, most urban centres in the San Francisco Bay Area, and, most recently, Ventura County (northwest of Los Angeles).

Unbounded Metropolitan

Beginning in the 1970s, several metropolitan areas initiated metropolitan-wide containment efforts. The earliest and best known is Minneapolis-St. Paul (Twin Cities). Through the Metro Council, water and wastewater service is restricted to areas within an urban service boundary (USB) beyond which urban-scale development is not allowed. The USB is designed to have a 10-year supply of urbanizable land and every five years it is extended outward to accommodate the next 10 years. Outside the USB, however, homesites on one (0.4) to five (2.0) acre (hectare) parcels of land are not only allowed but proliferate. The Twin Cities containment program therefore merely contains development connected to public water and wastewater systems but not other forms of low-density urban development. In fact, among major metropolitan areas (those of more than two million residents in 2000), only Atlanta has lower density development than the Twin Cities (based on 1990 census figures). Other notable examples of unbounded metropolitan urban containment include Austin, Denver, and Orlando.

Bounded Metropolitan

The nation's oldest and best-known example of bounded urban containment was launched by metropolitan Portland, Oregon, in the late 1970s. It is administered by a regionally-elected body known simply as 'Metro'. In theory, urban development is contained with an urban growth boundary designed to accommodate urban for about 20 years, after which the UGB was to be expanded to meet the next 20 years demand for growth. In practice, the UGB has changed very little in total land area and almost all of the next 20 years of development is intended to be accommodated within mixed use, urban infill, redevelopment, and brownfield development sites. Outside the UGB, no urban scale development is allowed (aside from areas already built and committed to nonrural uses). This is accomplished through very large lot zoning and restrictions on nonfarm and nonforest dwellings. Other leading examples of bounded metropolitan containment are Miami-Dade County (the nation's oldest containment program among major metropolitan areas), Broward and West Palm Beach counties, Sacramento, San Diego, and Seattle.

Natural Containment

The foregoing are examples of policy-driven containment. There are situations where containment occurs because of natural or political limitations. Los Angeles is perhaps the best-known example. Phoenix is another example because severe water supply limitations and extensive public ownership of land truly limit the outward expansion of urban development there.

Analytic Approach

What differences does containment make and do different styles have different outcomes? The question can be addressed descriptively by comparing examples of each style of containment with a reasonably comparable metropolitan area that does not engage in containment. Matched pair and group-wise comparisons are thus presented here (but without statistical testing for significance). The pairs selected for study are based generally on their comparability in terms of size and/or growth rate during the 1990s, location within the same state or region (with some necessary exceptions), and landscape. The pairs are shown in [Table 14.1](#) and descriptions follow.

Table 14.1 Experimental and control selections for urban containment assessment in the US

Containment style	Containment group	Control group
<i>Submetropolitan</i>	Lexington-Fayette County KY	Knoxville TN
	Nashville TN	Memphis TN
	Minneapolis-St. Paul MN	Kansas City MO/KS
<i>Unbounded</i>		
<i>Bounded</i>	Sarasota FL	Ocala FL
	Portland ORIW A	Charlotte NC
<i>Natural</i>	Sacramento CA	
	Bakersfield CA	
<i>Submetropolitan Containment</i>	Los Angeles CA	Dallas-Ft. Worth TX
	Phoenix AZ	Atlanta GA

Submetropolitan Containment

Lexington and Knoxville are both major university cities (University of Kentucky and University of Tennessee) in neighbouring states sharing roughly the same landscape (west of the Appalachian Range) and growth rates during the 1990s (21.1 per cent and 30.5 per cent respectively). Lexington has employed submetropolitan urban containment for nearly half a century while Knoxville chooses a laissez-faire attitude to managing growth. Nashville and Memphis are in the same state and have the same landscape. Both grew faster than the national average but Nashville did grow twice as fast, 33.4 per cent to 17.1 per cent.

Unbounded Metropolitan Containment

Minneapolis-St. Paul and Kansas City are the two largest metropolitan areas in the upper midwest and each spill over into adjacent states. The Twin Cities has had an urban service boundary limiting urban-scale development since the 1970s but Kansas City employs no policy restraints on development. The landscape is essentially flat and both had roughly the same growth rates in the 1990s (25.1 per cent and 17.5 per cent respectively). Sarasota and Daytona Beach are coastal counties in the same state, Florida, sharing similar landscapes and growth rates (40.9 per cent and 49.5 per cent in the 1990s respectively). Both metropolitan areas are subject to statewide growth management planning in Florida but only Sarasota has an urban growth boundary and it predates Florida's current planning laws.

Bounded Metropolitan Containment

Portland, Oregon and Charlotte, North Carolina are the largest metropolitan areas in their respective states. Although on different coasts and decidedly different cultures, this pair was selected for several reasons. First, other regional candidates for Portland are either already under some form of containment (such as Sacramento and Denver) or the landscape lends itself naturally to containment (such as Salt Lake City and Phoenix). Second, the terrain of both is flat to gently rolling and there is very little restraint to having individual water wells and septic systems in both. (The mountains to the east of Portland are analogous to the mountains to the west of Charlotte.) Third, they enjoyed roughly the same rate of growth in the 1990s (32.0 per cent and 38.8 per cent respectively). Portland has had a metropolitan-wide urban growth boundary with restrictive open space development since the 1970s while Charlotte uses only a loosely drawn and highly flexible urban services boundary in only the central county (Mecklenberg) with little constraint to urban-scale development outside. Sacramento and Bakersfield are in the same agricultural region of the same state (California) and had similar growth rates during the 1990s (45.7 per cent and 44.4 per cent respectively). Sacramento has employed an urban limit line since the 1970s with restrictions on open space development outside it while there are no such constraints in Bakersfield.

Natural Metropolitan Containment

Los Angeles and Dallas-Ft. Worth are large metroplexes that differ dramatically. Los Angeles is hemmed in by an ocean, mountains and deserts while Dallas sits in the middle of an essentially flat plain with no barriers to development – except that water is deep. Los Angeles is the nation's most densely settled metropolitan areas while Dallas-Ft. Worth is among the least. Both grew rapidly during the 1990s (31.2 per cent and 49.1 per cent respectively). Other than missing an ocean, Phoenix and Atlanta enjoy similar contrasts and both grew rapidly (72.9 per cent and 60.8 per cent respectively). During the period from 1970 through 2000, these metropolitan ranked first and second, respectively, in the rate of growth among major metropolitan areas.

Outcome Measures

Academic literature suggests that urban containment promises much such as reducing land consumption, automobile dependency, racial segregation, and improving economics of agglomeration, among other things (see Nelson 2000).

Reducing Land Consumption

By containing the outward expansion of development, the hope is that less land will be converted from open space to urban uses. This would preserve farmland, forestland, and other open spaces for their public good features such as air and water cleansing, controlling floods, recharging aquifers, preserving habitats, and providing natural buffers between urban areas. Reducing land consumption is also important for other things such as reducing dependency on the automobile, vehicle miles travelled, and air pollution, and improving economies of agglomeration.

Table 14.2 Change in urbanized land divided by population change, 1982–1997

Containment group		Control group	
<i>Submetropolitan</i>	Figure		Figure
Lexington-Fayette County KY	3.23	Knoxville TN	4.15
Nashville TN	3.08	Memphis TN	3.94
Group (unweighted)	3.16	Group (unweighted)	4.05
<i>Unbounded</i>			
Minneapolis-St. Paul MN	2.43	Kansas City MO/KS	2.10
Sarasota FL	0.89	Ocala FL	1.52
Group (unweighted)	1.66	Group (unweighted)	4.05
<i>Bounded</i>			
Portland OR/WA	1.53	Charlotte NC	1.90
Sacramento CA	1.09	Bakersfield CA	2.78
Group (unweighted)	1.31	Group (unweighted)	4.05
<i>Natural</i>			
Los Angeles CA	0.88	Dallas-Ft. Worth TX	1.11
Phoenix AZ	0.57	Atlanta GA	1.34
Group (unweighted)	3.16	Group (unweighted)	4.05
<i>All Contained Metros</i>	1.72	<i>All Uncontained Metros</i>	2.36
<i>Policy Contained Metros</i>	2.04	<i>Policy Match Metros</i>	2.73

Source: Adapted from Fulton, Pendall, Nguyen and Harrison (2001).

Table 14.2 reports an index relating the change in urbanized land to population growth between 1982 and 1997. Numbers more than 1.0 indicate more land is being consumed than the population is growing. For the most part, except for the naturally contained metropolitan areas, all selected metropolitan areas ‘sprawled’ during the 1990s in the sense that more land was consumed than the population grew. The only exception among policy-contained metropolitan areas is Sarasota. Within all groups, contained areas

sprawled less during the 1990s than uncontained areas. Also, what is interesting is that the index for land consumption among containment efforts declines the more rigorous the effort is, from 3.16 among submetropolitan containment efforts to 1.66 among unbounded metropolitan efforts to 1.31 among bounded metropolitan efforts. Yet, it is the naturally contained metropolitan areas that sprawled the least.

There are interesting comparisons. Dallas-Ft. Worth, an uncontained metropolitan area, sprawled only slightly more than metropolitan Portland, while Atlanta – whom some consider the quintessentially sprawled metropolitan area – sprawled less than the Twin Cities. However, we know nothing about where ‘sprawl’ occurs.

In the Portland and Twin Cities contexts, if the majority of newly developed land occurred inside the UGB then what appears to be sprawl may really be development occurring where it is intended. Another issue emerges. Why is the sprawl indicator for the Twin Cities so large (land consumption increased 61.1 per cent compared to growth of 25.1 per cent)? Could it be that regulations inside the urban service boundary actually spin development outward? [Table 14.2](#) elicits more questions than can be answered, and is really just the beginning of inquiry into the difference outcomes of varying styles of containment.

Reducing Single-Occupant Vehicle Dependency

Using the Census 2000 Supplemental Survey, which applies to only counties of more than 250,000 population and then only to central counties, [Table 14.3](#) presents changes in single-occupant mode during the journey to work between 1990 and 2000. Results are little more mixed than those seen in [Table 14.2](#). In all groups, policy-induced containment styles performed better in shifting people away from the single-occupant mode than the metropolitan controls. The big surprise is really with the Twin Cities, which saw the largest drop in the single-occupant mode among all metropolitan areas – the surprise being that it also had among the highest indexes of sprawl. The anomaly is attributable to scales of analysis. The analysis in [Table 14.3](#) is of central counties while all the other tables compare all counties within selected metropolitan areas. Thus, we might surmise that Hennepin County has been very successful in shifting people away from the single-occupant mode but perhaps the rest of the metropolitan area has not been as successful. Generally

speaking, containment of all types did a better job of keeping single-occupant commuting in check than noncontainment.

Table 14.3 Change in single-occupant vehicle journey-to-work, largest central county, 1990–2000

Containment Group		Control Group	
	Figure		Figure
<i>Submetropolitan</i>			
Lexington-Fayette County KY		Knoxville TN	
1990	78.4	1990	80.6
2000	81.0	2000	88.9
Change	+3.31%	Change	+10.30%
Nashville TN		Memphis TN	
1990	78.3	1990	77.8
2000	76.1	2000	75.9
Change	-2.81%	Change	+2.44%
Group (unweighted)	+0.25%	Group (unweighted)	+3.93%
<i>Unbounded</i>			
Minneapolis-St. Paul MN		Kansas City MO/KS	
1990	74.2	1990	74.8
2000	64.5	2000	77.8
Change	-13.07%	Change	+4.01%
Sarasota FL		Ocala FL	
1990	79.8	1990	76.3
2000	79.9	2000	80.0
Change	+0.12%	Change	+4.85%
Group (unweighted)	-6.48%	Group (unweighted)	+4.43%
<i>Bounded</i>			
Portland OR/WA		Charlotte NC	
1990	67.6	1990	78.7
2000	65.2	2000	81.3
Change	-3.55%	Change	+3.03%
Sacramento CA		Bakersfield CA	
1990	75.8	1990	74.7
2000	74.3	2000	75.1
Change	-1.98%	Change	+0.54%
Group (unweighted)	-2.77%	Group (unweighted)	+1.92%
<i>Natural</i>			
Los Angeles CA		Dallas-Ft. Worth TX	
1990	70.1	1990	76.2
2000	71.2	2000	76.5
Change	+1.57%	Change	+0.04%
Phoenix AZ		Atlanta GA	
1990	75.0	1990	70.0
2000	63.9	2000	73.3
Change	-1.47%	Change	+4.71%
Group (unweighted)	+0.05%	Group (unweighted)	+2.38%
<i>All Contained Metros</i>	-2.74%	<i>All Uncontained Metros</i>	+3.17%
<i>Policy Contained Metros</i>	-3.66%	<i>Policy Match Metros</i>	+3.34%

Source: Data adapted from *Census 2000 Supplemental Survey for central counties* and *1990 Census*.

Reducing Vehicle Miles Travelled

[Table 14.4](#) compares changes in vehicle-miles-travelled (VMT) per resident in the selected metropolitan areas. The data come from the Texas Transportation Institute (TTI) (2002). Because of missing values for the smallest metropolitan areas, within and among group comparisons are not easy to make. For the most part, however, contained metropolitan areas saw either smaller increases or reductions in VMT per resident compared to the matched metropolitan areas. One interesting anomaly is with metropolitan Portland, which saw a 30.7 per cent increase in VMT, which seems inconsistent with its performance in other indicators. However, the source of data itself creates a problem. The TTI divides regional VMT by ‘urban’ population. In the case of Portland, the area classified as ‘urban’ by TTI differs from that defined by the Census, being smaller and not including all area within the UGB. In fact, the urban population denominator is only about a half of the entire population living inside the UGB. TTI figures may be misleading in this application. Nonetheless, assuming errors cancel when using pooled analysis, it would appear that containment generally keeps the lid on VMT increases over time relative to metropolitan areas not subject to containment.

Reducing Racial Segregation

Almost by definition, urban containment ought to bring races together while sprawl separates them. [Table 14.5](#) compares contained and uncontained metropolitan areas in terms of their change in the index of segregation between African-American (including all self-identified categories) and Anglo residents. Data on racial segregation from the Mumford Centre at the State University of New York at Albany show that segregation is declining nationally. Using the index of segregation, where 100 means all members of a racial minority settle in one location and 0 means they are distributed proportionate to their share of Anglo population, the national average (unweighted) index for African-American segregation was 58.85 in 1990 but fell to 51.43 or 12.6 per cent in 2000. Scores of more than 60 are considered

evidence of systematic racial segregation. What we see in [Table 14.5](#) is that, for the most part, contained metropolitan areas became less segregated at a pace comparable to the national average the control metropolitan areas became less segregated at a pace slower than the national average. The group where the pace of desegregation was the highest and outpaced the national average is bounded metropolitan containment.

Table 14.4 Change in vehicle-miles-travelled, metropolitan areas, 1990–2000

Containment Group		Control Group	
<i>Submetropolitan</i>			
Nashville TN	Figure	Memphis TN	Figure
1990	27.6	1990	18.8
2000	32.8	2000	23.1
Change	+18.84%	Change	+22.87%
<i>Unbounded</i>			
Minneapolis-St. Paul MN		Kansas City MO/KS	
1990	21.5	1990	23.7
2000	23.0	2000	28.9
Change	+6.98%	Change	+21.94%
<i>Bounded</i>			
Portland OR/WA		Charlotte NC	
1990	16.3	1990	22.5
2000	21.3	2000	27.1
Change	+30.67%	Change	+20.44%
Sacramento CA		Bakersfield CA	
1990	21.1	1990	16.8
2000	20.8	2000	16.5
Change	-1.42%	Change	-1.79%
Group (unweighted)	+14.63%	Group (unweighted)	+9.33%
<i>Natural</i>			
Los Angeles CA		Dallas-Ft. Worth TX	
1990	22.8	1990	25.5
2000	21.4	2000	29.5
Change	-6.14%	Change	+15.69%
Phoenix AZ		Atlanta GA	
1990	20.9	1990	28.8
2000	21.2	2000	34.1
Change	+1.44%	Change	+18.40%
Group(unweighted)	-2.36%	Group (unweighted)	+17.05%
<i>All Contained Metros</i>	+8.40%	<i>All Uncontained Metros</i>	+16.26%
<i>Policy Contained Metros</i>	+12.23%	<i>Policy Match Metros</i>	+19.99%

Source: Data adapted from Texas Transportation Institute (2002). Comparable data do not exist for Lexington-Fayette County KY, Knoxville TN, Sarasota FL, or Daytona Beach FL.

While urban containment could lead naturally to greater integration of the races simply because people cannot escape, this is not necessarily the case. Arguably, the most contained metropolitan area in the contiguous 48 states is Los Angeles, which is highly segregated, desegregated at a pace much less than the national average. In contrast, other metropolitan areas engaged in policy-induced containment saw segregation fall at a pace comparable to or greater than the national average. The reason may be that such metropolitan areas are more responsive to a wider range of policy issues than other metropolitan areas, and are thus prone to enacting inclusionary housing policies (Pendall, 2000; Nelson, et al., 2002). This is an area ripe for further research.

Improving Economies of Agglomeration

Concentration of activity can reduce economic transaction costs and create other efficiencies. Such ‘agglomeration’ economies should be capitalized into higher per capita incomes. [Table 14.6](#) compares changes in personal per capita income between 1989 and 1999 using the Regional Economic Information System (2002). Figures are not adjusted for inflation. In all policy-driven containment examples, incomes rose faster than in noncontainment areas. There appears to be some evidence that containment may lead to economies of agglomeration that are reflected in increasing personal per capita income.

Review

Urban containment is controversial primarily because it aims to undo centuries of unimpeded development across the United States. The nation was built on giving people land and assuring their right to use it profitably. Indeed, in the 100 years between 1850 and 1950, the United States gave away half of the 1.6 billion acres of land it had acquired through secession, war, occupation, and purchase. Were it not for millions of people ‘sprawling’ from

the east across the continent to the west, the United States would surely be a smaller and different nation.

During the 20th Century, technological improvements created burgeoning metropolitan areas while rising incomes gave people the opportunity to express their preference for life-styles that are decidedly not urban though not rural. The resulting development patterns have led allegedly to adverse outcomes. To change development patterns, a growing number of local, regional, and state governments are attempting to contain the outward expansion of urban areas. While the containment of Great Britain may be viewed by some as the quintessential approach to containment, American-style containment is different and diverse. Generally speaking, we have found three forms of policy-driven containment – submetropolitan, unbounded metropolitan, and bounded metropolitan, and one natural form.

Table 14.5 Change in Anglo-African American Segregation, 1990–2000

Containment Group

Control Group

<i>Submetropolitan</i>	Figure		Figure
Lexington-Fayette County KY		Knoxville TN	
1990	51.8	1990	63.7
2000	47.8	2000	58.1
Change	-7.72%	Change	-8.79%
Nashville TN		Memphis TN	
1990	60.9	1990	69.0
2000	57.0	2000	68.7
Change	-6.40%	Change	-0.43%
Group (unweighted)	-7.06%	Group (unweighted)	-4.61%
<i>Unbounded</i>		Kansas City MO/KS	
Minneapolis-St. Paul MN		1990	73.2
1990	63.5	2000	69.1
2000	57.8	Change	-5.60%
Change	-8.98%	Ocala FL	
Sarasota FL		1990	76.3
1990	75.9	2000	80.0
2000	67.2	Change	-18.18%
Change	-11.46%	Group (unweighted)	-11.89%
Group (unweighted)	10.22%		
<i>Bounded</i>		Charlotte NC	
Portland OR/WA		1990	56.4
1990	66.2	2000	55.2
2000	48.1	Change	-2.13%
Change	-27.73%	Bakersfield CA	
Sacramento CA		1990	58.1
1990	57.1	2000	52.3
2000	56.0	Change	-9.98%
Change	-1.93%	Group (unweighted)	-6.06%
Group (unweighted)	-14.83%		
<i>Natural</i>		Dallas-Ft. Worth TX	
Los Angeles CA		1990	63.6
1990	73.6	2000	59.4
2000	67.6	Change	-6.60%
Change	-8.15%	Atlanta GA	
Phoenix AZ		1990	68.8
1990	51.6	2000	59.4
2000	43.1	Change	-4.65%
Change	-16.50%	Group (unweighted)	-5.63%
Group (unweighted)	-12.33%		
<i>All Contained Metros</i>	-11.11%	<i>All Uncontained Metros</i>	-7.05%
<i>Policy Contained Metros</i>	-10.70%	<i>Policy Match Metros</i>	-7.52%

Source: Data adapted from Lewis Mumford Centre for Comparative Urban and Regional Research, State University of New York at Albany. Web site <http://www.albany.edu/mumford/>.

Table 14.6 Change in per capita personal income, 1989–1999 (\$'000s)

Containment Group			Control Group		
<i>Submetropolitan</i>					
Lexington-Fayette County KY			Knoxville TN		
1990	17.3		1990	16.5	
2000	28.2		2000	25.6	
Change	+63.01%		Change	+55.15%	
Nashville TN			Memphis TN		
1990	18.4		1990	17.5	
2000	30.5		2000	28.8	
Change	+65.76%		Change	+64.57%	
Group (unweighted)	+64.34%		Group (unweighted)	+59.86%	
<i>Unbounded</i>					
Minneapolis-St. Paul MN			Kansas City MO/KS		
1990	21.8		1990	19.1	
2000	35.3		2000	30.2	
Change	+61.93%		Change	+58.12%	
Sarasota FL			Ocala FL		
1990	23.9		1990	16.2	
2000	35.7		2000	22.3	
Change	+49.37%		Change	+37.65%	
Group (unweighted)	+55.65%		Group (unweighted)	+47.89%	
<i>Bounded</i>					
Portland OR/WA			Charlotte NC		
1990	19.1		1990	18.5	
2000	30.7		2000	30.3	
Change	+60.73%		Change	+63.78%	
Sacramento CA			Bakersfield CA		
1990	19.8		1990	15.8	
2000	28.7		2000	19.9	
Change	+44.85%		Change	+25.95%	
Group (unweighted)	+52.79%		Group (unweighted)	+44.87%	
<i>Natural</i>					
Los Angeles CA			Dallas-Ft. Worth TX		
1990	20.5		1990	20.7	
2000	28.3		2000	34.7	
Change	+38.05%		Change	+67.63%	
Phoenix AZ			Atlanta GA		
1990	18.1		1990	20.0	
2000	27.6		2000	32.5	
Change	+52.49%		Change	+62.50%	
Group (unweighted)	+45.27%		Group (unweighted)	+65.07%	
<i>All Contained Metros</i>			<i>All Uncontained Metros</i>		+54.42%
<i>Policy Contained Metros</i>		+54.51%	<i>Policy Match Metros</i>		+50.87%
		+57.59%			

Source: Data adapted from Regional Economic Information System, Bureau of Economic Analysis, US Bureau of Commerce.

Does containment make a difference, and does that differ depend on the style? This preliminary assessment suggests that, on the whole, the more rigorous the containment style the better the outcome in containing the outward expansion of urban areas, shifting journey to work mode away from single-occupant vehicles, holding VMT in check if not reducing it, facilitating racial desegregation (among blacks and whites), and improving incomes. For the most part, naturally contained metropolitan areas enjoy similar outcomes but with decidedly tepid trends.

Despite the evidence provided in this preliminary assessment it would be inappropriate to conclude at this time that containment *per se* is an improvement over conventional development patterns. Needless to say, this is a field ripe for study.

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Chapter 15

Local Innovations in Controlling Sprawl: Experiences with Several Approaches in the Seattle Urban Region

Donald Miller

Introduction

The outward spatial growth of US metropolitan areas has outpaced population growth over the last three decades. This growth at the edges of previous urban development began much earlier but became more pronounced with mortgage insurance programs that favoured suburban locations, and with heavy investment in the interstate highway system of the mid 1950s which had the unintended result of encouraging more people to commute longer distances by automobile. The phenomenon of much if not most of new construction in metropolitan regions involving conversion to urban uses of land in what had been countryside is commonly referred to as urban sprawl.

This paper seeks to address two issues. The first of these is to review the meanings of urban sprawl, and why this phenomenon is widely considered as undesirable. While many interests inveigh against sprawl, this often takes place without clearly defining the term and convincingly addressing the purposes of curbing it.

The second task is to discuss and assess the effectiveness of means to limit and manage the spread of suburban development. To do this, focus will be on efforts undertaken in the Seattle metropolitan region, in large part in response to the Washington State Growth Management Act (GMA), adopted in 1990. This case is employed because growth management planning and implementation programs here were built on the experience of earlier similar programs in other states and have benefited from exceptional popular

support, and so tend to demonstrate what may be politically possible elsewhere.

Perhaps more importantly, the range of initiatives by governmental and nongovernmental organizations in the Seattle region include both previously tried and innovative approaches to guiding growth. As a consequence, these features of planning and means of implementation can provide a repertoire of ideas that may inform and inspire similar efforts by other communities. Sharing the experience with these initiatives, to the extent that local evidence is available, is helpful in evaluating their likely success of adapted for use elsewhere.

What Is Urban Sprawl, And Why Is It Considered Undesirable?

As Garreau points out in Edge City (1991), if every household in the US lived on a quarter-acre lot, which is the density that we commonly equate with sprawl, all of this population could be accommodated on 1.22 per cent of the land area in the continental states. This observation raises questions concerning what do we mean by the term sprawl, what are its causes, what are its costs, and if sprawl poses problems how might we resolve these?

Definitions of Sprawl

There are many definitions of suburban sprawl, which may result from it being difficult to define adequately this pattern of development (Gottdiener, 1977). One approach is to identify sprawl as the haphazard development of rural lands between the built-up cities and suburbs, and the open countryside (Daniels, 1999). Another is to note a single characteristic of this sort of development, by using terms such as suburban development or low density (Downs, 1994; Ylvisaker, 1972). In reviewing seventeen different characterizations of sprawl, Ewing (1997) notes that no simple archetype provides a realistic definition of it, and that in most cases definitions include several features of this form of development. These features commonly include commercial strip development, large expanses of low-density or single use development, scattered development and few significant employment centres, and leapfrog development.

Even though these characteristics appear in many definitions of suburban sprawl, each of them may be present in varying degrees, and at some level each may define the antithesis of sprawl. Thus for example, linear development may be at a density and include a mix of activities which differentiates it from strip commercial, and some scattered or leapfrog development may be a strategy for providing sites for mixed or higher density uses later (Lessinger, 1962).

A number of efforts to define suburban sprawl focus less on physical characteristics and more on the impacts that make this form of development undesirable. One example is found in the Sierra Club's Challenge to Sprawl Campaign:

... scattered development that increases traffic, saps local resources and destroys open space ... (Sierra Club, 2000).

A similar definition in terms of consequences is part of a sprawl report card:

... unplanned development that: uses our land inefficiently; forces residents to depend on their automobiles almost exclusively for transportation; has inadequate open space amenities, such as parks and stream corridors; and, does not include a balance of jobs and affordable housing. (1000 Friends, 1999).

Yet another approach is to find ways to measure the existence and even the degree of suburban sprawl. In one case, principal indicators include poor accessibility and lack of functional open space (Ewing, 1994). Indicators for accessibility include average travel time and average trip distance between activities sought by households or places of business. Functional open space refers to land playing a useful public role such as acreage in farming, in public ownership for uses such as recreation, or left natural for wildlife habitat or flood control. Another example, using measures to define the presence of exurban sprawl, chooses per cent of employees working outside of the county of residence, commuting times to work, population density changes in fringe counties, and addition of counties to metropolitan areas (Lucy and Phillips, 2000).

In a more elaborate effort to quantify the degree of sprawl, for purposes of rating the performance and policies of 33 cities in the Seattle urban region, measures are developed that relate to density, transportation, housing and jobs, and the environment (1000 Friends, 1999). Measures concerning

inefficient uses of land include residential density per acre zoned for residential use, how small that required minimum lot sizes are, and how much residentially zoned land is allocated to low (up to 8 units per acre), medium (8-15 per acre), and higher (over 15 per acre) density development. For housing and jobs, attributes measured are median house prices, jobs-housing balance in terms of number of jobs per resident, and what is permitted under accessory housing regulations. Transportation indicators include transit headways, how low parking ratios are for retail and multi-family developments, and field survey of pedestrian friendliness of downtowns in terms of interest and amenities. Finally, environment includes measures of wetland and stream buffers, and the number and number of acres per capita of parks and open spaces. Scores of up to 25 points for each of these four categories provide the basis for ranking and rating these cities to produce a sprawl report card which defines the problem and to provide a basis for offering specific actions to improve performance on these dimensions.

A summary definition of suburban sprawl, drawing on these and other efforts, would combine physical features, consequences, and even causes. It would at least include uncoordinated, unconstrained and unplanned outward extension of single-use areas of development; scattered, leapfrog, low density, strip development patterns; dominance of transportation by private automobiles; segregation of land uses; inadequate provision of open spaces for amenities such as parks and for natural environmental uses such as stream corridors; and spatial mismatch between activities such as living and working areas not being close to each other.

Causes of Urban Sprawl

There may be more consensus over the causes of urban sprawl than concerning how best to define it. Even so, these causes are numerous and it is difficult to assess their relative importance in giving rise to sprawl. As early as the 1930s, there was concern about the role of new suburban railway lines in making commuting easier around London, resulting in continued sprawl (Larkham, 1996).

This raises the issue of residential preferences. There is a substantial research-based literature on households choosing low-density suburban living over high-density central city options, especially during the 20th

century (Ewing, 1994). These causes tend to take the form of factors that have pushed people out of cities, and factors that have pulled them to suburbs.

Push factors include flight from social discomfort from living near people unlike themselves, congestion, expensive public services paid for through taxes, high property and shelter costs, and poor environmental qualities such as noise and air pollution (Fishman, 1987; De Roo and Miller, 2000).

Pull factors encouraging households to seek low-density living towards the edges of urban regions include lower prices of land and housing, greater privacy gained in part through larger lot sizes, exclusion of others unlike themselves, social status of living in an updated version of a country house, paying through taxes for services that they prefer, and preferred environmental qualities largely provided by ample outdoor space (Gordon and Richardson, 1997).

Locations in which these factors are satisfied are changing, as are some preferences, and as are the characteristics of households themselves. For example, development of compact residential areas with sought after amenities in or near downtowns have had success in a number of cities over the last few years (Freilich, 1999). Much of the housing is multi-family in mixed-use buildings and areas, encouraging walking. At the same time, these close-in locations offer useful access to desired activity locations, while traffic in suburban locations is becoming increasingly congested (Duffy, 1995).

Design of multi-family buildings can provide greater privacy, security, and joint-use facilities than were commonly available in all but very expensive higher-density housing just a few years ago in most US markets. Additionally, the characteristics of the urban populations are changing as well, with young adults and the expanding number of people late in their careers or retired constituting smaller households. A growing proportion of the people in these demographic groups are seeking smaller residences in settings offering urban amenities and central locations. Growth in these segments of the housing market can reduce demand for additional fringe expansion of urban areas at low densities (Nelson and Duncan, 1995).

While household preferences have fuelled demand for suburban homes, the result is not necessarily sprawl. That is, even single-family detached housing on small lots can result in densities of six to eight units per acre,

which reduces the costs of providing infrastructure and services, can make providing open space more feasible economically, and is proving to be accepted by the market (NAHB 1986). Furthermore, housing preferences provide an incomplete explanation of how sprawl occurs.

A major cause of sprawl has been a set of subsidies which, while they have been in place for over five decades in the US, are sometimes overlooked. These range from federal mortgage insurance programs which have favoured new development in suburban locations, to the Interstate Highway program which made access by private automobile easy to fringe areas of the urban region. To these federal subsidies have been added subsidies paid for by local taxes. New and expanded road construction in most metropolitan areas respond to increased demand from scattered development. Transportation options are crowded out by the high cost of these improvements (Boarnet and Haughwout, 2000).

Similarly, extension of sewer and water systems, construction of new schools, and provision of urban services such as fire and police to low-density, scattered developments are more expensive than to more compact forms of development (NRC, 1998). These new and higher expenses are seldom covered by development fees, nor by taxes generated by the new development, but rather are subsidized by the whole governmental jurisdiction (Black, 1996). Loss of open space, and external effects of using the private automobile for most trips are additional examples of the prices charged not matching the costs incurred. These market failures and others help to explain why sprawl occurs (Lee, 1979).

Another major factor commonly contributing to sprawl is the fragmented authority to make purposeful decisions concerning the timing, location and form of growth toward the edges of urban regions. There is also the tendency of local governments to pursue economic growth, often by offering inducements to firms to locate within the jurisdiction, as a desperate means to cover the costs of new infrastructure and services. These uncoordinated decisions, along with developers and lenders seeking to limit risks and obtain satisfactory profits, and consumers making housing location choices in a distorted market, has been referred to as the ‘tyranny of easy development decisions’ (Lucy and Phillips, 2000, p. 21) on the fringe of metropolitan areas, which leads to sprawl.

Costs of Sprawl

The preceding brief review of several definitions and some of the factors contributing to suburban sprawl sets the stage for addressing some of the major concerns that are raised by this form of development. These consequences both justify trying to control and reverse scattered development, and can suggest some of the ways to accomplish this.

One effect of scattered, low-density development is that it requires using the automobile for trips away from home, and lengthens these trips. It is estimated that the average driver in the US spends 443 hours a year – approximately fifty-five eight-hour work days – in traffic. Residents of compact areas drive between one third and one fourth as much as do residents of areas characterized by sprawl (Newman and Kenworthy, 1999). This dependence on the private automobile has in turn a number of consequences. Sprawl increases traffic on local streets and highways resulting in congestion. As noted earlier, congestion generates demand for additional investments in streets and highways, though all research points to new capacity leading to more traffic and more sprawl. Longer commutes, both in terms of vehicle miles and vehicle hours of travel, require non-renewable resources, and occupy time that might otherwise be spent with family or on work or recreation. Those who do not drive, either because of age or because they can not afford a car, are isolated in low density environments, since these settings are difficult to serve with public transit (Troy, 1996).

Additionally, automobile emissions are a major source of air pollution, ranging from carbon monoxide and particulate matter that are harmful to health, to carbon dioxide that is responsible for the greenhouse effect (TRB, 1997). Motor vehicles used in the US produce twelve billion pounds of toxic chemicals each year, which on a per capita basis equals almost fifty pounds (Sierra Club, 2000). These toxic materials adversely affect both plant and animal life, erode building materials, and pollute storm water runoff.

Aside from contributing to dependence on cars and to the external costs that this generates, sprawl results in extensive conversion of open, rural land use. Much of this land is in productive agricultural use and in forestry, which also provides welcome open space and wildlife habitat, and these produce important visual and other amenities. Sprawl development often occupies flood plains, thus increasing the risks from flooding, and has often displaced

wetlands that are valuable both as habitat and in filtering and storing surface water (Bullard, Johnson and Tores 2000; Nelson and Duncan 1995).

Low-density, scattered development both takes land for residential and other uses, and precludes resource uses of nearby land left undeveloped for these urban uses (Miller and Rose, 1985). Even forty years ago, Clawson concluded that there was almost as much idle land in urbanized areas in the US as there was land in active urban uses (1962). While any urban use usually can outbid an open rural use of land, these market values do not include some important collective consumption and external aspects of open uses (Downs, 1999).

Sprawl developments also commonly exert external effects on the central cities that they surround. These include eroding the city's tax base as retail and other economic activities seek less expensive sites. This in turn makes employment less accessible to lower skilled city residents, results in income segregation of the region's population, and reduces reinvestment in the central city (Lucy and Phillips, 2000). In the extreme cases, this has led to 'doughnut' cities in which population movement away from the city centre to peripheral areas leaves buildings and land in the centre abandoned and derelict (Larkham, 1996). As noted earlier, areas in more compact forms of development often end up subsidizing the costly extension of facilities and services to these peripheral areas, heightening the regressive redistribution effects of sprawl.

Some Solutions to Sprawl

In light of these costs of sprawl, what are some of the major prescriptions for halting and reversing unmanaged, scattered development beyond the edge of service and employment? Stratégies to accomplish this in the US are often called 'growth management' or, more recently, 'smart growth' (DeGrove and Metzger, 1993; Burby and May, 1997). Toward the top of most lists is directing transportation funding to existing areas to improve not only street capacity but other modes of transportation including walking and public transit, and so promoting transportation choices (Brueckner, 2000). A related proposal is to offer housing alternatives which are higher in density and include mixed uses, encouraging pedestrian activity and functioning as transit oriented developments. Some means of accomplishing this is adopting minimum density requirements resulting in lots smaller than have been

common in the past, facilitating a mix of housing types, and permitting both attached and detached accessory dwelling units with safeguards for surrounding single-family housing.

Several recommendations from smart growth proposals seek to slow the over-development of rural lands (Deyle and Smith, 1998). One proposal is to reduce rural densities permitted by zoning to lot sizes that are large enough to support farming or forestry. Some statistical analysis concludes that this is not effective in halting sprawl and in fact may contribute to it (Pendall, 1996). Other recommendations include using incentives such as transfer of development rights to shift growth from rural to urban areas (Bae, 2000). Used by several growth management programs, establishing urban growth boundaries that are implemented by zoning and by limiting capital investments for extending urban infrastructure is another tactic. Finally, proposals have been advanced to acquire greenbelts and key agricultural lands either through direct purchase or through acquiring conservation easements that will keep these lands in open rural uses.

The following section describes a number of initiatives in Washington State to accomplish this, several of them innovations by local governments in the Seattle metropolitan region. Focusing on programs that have been tried in a particular urban setting helps to assure that they were politically feasible, and that experience with them provides lessons for designing counterpart programs in other communities. There is now enough experience with some of these programs to begin to evaluate their effectiveness as well. Some information on the Washington Growth Management Act and on the Seattle metropolitan region provides a context for considering these programs to manage the location and nature of growth.

Approaches to Controlling Sprawl: Case of the Seattle Region

Of eleven states in the US that have growth management programs, the one in Washington is among the newest. During the 1980s, growth in jobs and population resulted in suburban developments that increased the costs of providing urban-level infrastructure and services, consumed farmland, and threatened the environmental qualities that had attracted many businesses and households to the state. These developments were especially noted in King

County, in which the City of Seattle is located, leading to the county preparing a growth management plan that identified and worked to conserve important natural areas and established an urban growth boundary for the purpose of arresting sprawl. Design of this plan, which was adopted in 1985, borrowed ideas from growth management programs elsewhere in the US, and became the prototype for the Washington State legislation.

In part based on the experience in King County, a political constituency took form that pressed for state enabling legislation that would not only permit localities to undertake growth management planning and implementation, but require localities in high growth areas to do so and to collaborate on regional issues (OCD, 2002). Since cities and counties are created by and are answerable to state government, rather than to the national government in the US, state enabling legislation was necessary in order for these local governments to take on these activities.

The Washington State Growth Management Act (GMA) was adopted in 1990 (Chapter 36.70A RCW – Revised Code of Washington). This state law specified fourteen goals for growth management. These include steering development to urban growth areas, reducing urban sprawl, working to retain open space, securing broad involvement by citizens in both planning and implementation, protecting critical areas, conserving lands in forestry and agriculture, assuring that public services and facilities are provided at the time of new development, and encouraging efficient multi-modal transportation systems.

While the GMA contains many provisions, six of the things that it stipulates that local governments engaged in growth management must do directly address these particular goals and are intended to reduce urban sprawl. These include establishing urban growth areas, identifying and preserving critical areas and resource lands, assuring concurrency of infrastructure with development, making all implementing activities consistent with the plan, developing regional policies, and monitoring growth and effectiveness of the local management program. These six requirements are seen as basic elements to the strategy of urban growth management that the state has directed localities to undertake (Nutley, 2000).

Urban Growth Areas

The GMA requires each county, in collaboration with the governments of cities within that county, to establish urban growth areas. These areas must include enough land to meet demands for development for twenty years, and thus avoid creating a scarcity that could artificially increase the cost of land and of housing. Forecasts of population and employment for this twenty-year period are supplied by the state Office of Financial Management.

Growth areas include all land within existing municipalities and additional areas currently served by urban infrastructure. No annexations or incorporations may occur outside of these areas, and counties are expected to limit development outside of the mapped urban growth boundary to rural uses. Cities and counties are also prohibited for funding urban facilities and services beyond the boundary. Every seven years, counties are to review their growth boundary and to amend it if this is necessary to meet new twenty-year forecasts.

Designated urban growth areas represent an explicit, major policy statement by county governments concerning where they will and will not accommodate additional growth, and so serves notice to agencies, developers, and the public. By being unambiguous, the mapped urban growth boundary facilitates public monitoring of investment and regulatory decisions as they are being made, and provides a basis for periodically assessing the effectiveness of the whole growth management program in a county jurisdiction.

Critical Areas and Resource Lands

As a first step in growth management planning, the GMA requires cities and especially counties to identify and employ regulations to protect critical areas. These areas include flood plains, wetlands, aquifer recharge areas important for supplying domestic water, and lands that are important habitats for fish and wildlife. Doing this in effect makes these lands unavailable for urban development, whether they are within or outside of the urban growth boundary.

As a part of developing land use plans, local governments must also designate important resource lands, including those in agricultural or forestry use, and the sites of major mineral resources. These resource lands are also to be preserved through regulation and other means.

Concurrency

As noted earlier, the GMA requires that adequate urban infrastructure and especially streets either be provided at the time that development projects are permitted, or that this be accomplished within six years of subdivision and building permit approval. Adequacy is determined by assessing the level of service provided by current infrastructure and its use. Thus if current traffic results in congestion on local streets, no additional development may be permitted until this congestion is reduced. King County, for example, recently identified some areas within the urban growth boundary in which current use exceeds acceptable levels of service and has served notice that no additional building permits will be issued in these areas until needed capital investments are made (Taus, 2002).

The GMA permits discretion on the part of local governments in defining the level of service that they consider to be adequate. However, in extreme cases, these locally determined standards may be appealed to the Growth Management Hearings Board, as being inconsistent with the goals of the state legislation. Local plans are not sent to the state for approval, but instead the quasi-judicial, appointed, three-person Hearings Board responds to appeals by citizen groups and other governmental units (OCD, 2002).

Since local governments are constrained from extending infrastructure and services outside of the urban growth boundary, the concurrency requirement is a significant means of halting further urban sprawl. The GMA provides, for the first time in Washington State, that localities can charge impact fees to developers for purposes of constructing infrastructure, however these fees must be spent on projects that directly serve the area of the proposed development.

Consistency

The GMA requires that each city and county in high-growth portions of the state prepare and approve a comprehensive plan which deals, at a minimum, with land use, housing, utilities, capital facilities, transportation, and that county plans also include rural use areas. The first round of these plans had to be completed in 1994, and recent amendments to the GMA call for thorough review and revision as necessary on a seven-year cycle. Some

jurisdictions in the Seattle area have already gone through this review process.

The consistency requirement stipulates that all regulations, capital investment decisions, and other development decisions that a local government makes must be in conformance with the provisions of its comprehensive plan. This establishes the plan as the central policy statement of that government concerning urban development. Since the plan has such standing, citizen groups and other interests recognize the value of their being engaged in its design and adoption, and can then use the plan to evaluate the appropriateness of regulations and their application. Furthermore, the plan can only be amended once a year, precluding changing the plan to accommodate a project that is inconsistent with it.

Regional Policies

As an early part of the planning process, cities and counties are required to collaborate in developing a set of planning policies that address inter-jurisdictional issues. Counties are considered as regions for this purpose, and the four-county Seattle urban region is identified as a region as well. Each county engages representatives of municipalities located within its borders to prepare these policies and, after this regional planning policy council approves them, the policies are adopted by the county legislative body. These regional policies must then be included in and addressed by the plans of each of these local governments.

In the instance of the four-county Seattle region, the Puget Sound Regional Council (PSRC) is the facilitating body. Its board, consisting of representatives of constituent local governments, has the responsibility for designing and approving these policies. The focus of these is on regional-scale land use decisions, region-serving facilities, and especially regional transportation infrastructure. This Council approved a regional plan in 1990 and has recently revised several elements of it (PSRC, 1990).

In a major regional initiative, the PSRC has developed and approved an urban centres policy. Twenty-one urban centres have been identified as locations for higher-density development, especially of employment. These centres are currently the location of nearly 30 per cent of the employment in the region, and include about 2 per cent of the land inside of the urban growth

areas for these four counties. The purpose of this policy is to encourage concentration of activity into multiple centres, which also include higher-density housing and are planned to be major nodes for public transit.

Regional policies at both the county and the four-county scales directly address suburban sprawl and provide additional support for delineated urban growth boundaries. They also deal with such inter-jurisdictional issues as the regional distribution of higher density development, including affordable housing, and ways in which plans can complement each other across city boundaries.

Monitoring

For the first time, local governments are required to continuously measure development and its impacts, and to evaluate the effectiveness of their comprehensive plans and progress in implementing them. While King County committed to developing an annual growth report when it approved its 1985 plan, developing and using such benchmarks is not something with which other communities had experience.

It proved helpful that in 1990 Sustainable Seattle, a non-governmental organization, had initiated a citizen-based program to develop a set of sustainability indicators for issuing periodic report cards on social, economic, and environmental developments (Miller, 1999). Participation in this exercise provided training for citizens, governmental staff, and elected officials, who also became an informed constituency for making monitoring a meaningful activity of local governments. Several of these governments adapted many of the Sustainable Seattle indicators for their own programs.

In addition, the state enabling legislation required each county in the Seattle urban region to undertake a buildable lands inventory. This survey, which is to be updated every five years, is for the purpose of assessing whether growth is taking place at the densities set out in their plans, and whether land is still available for development is adequate to accommodate projected demand for commercial, manufacturing, and residential space.

Each of these six basic requirements of the Washington GMA involves means of arresting and reversing urban sprawl. Together, they represent elements of a strategy to focus future growth to existing urban areas and centres, to foster infill development where urban infrastructure already

exists, and to protect areas that are environmentally critical or are currently in open rural use.

In addition to these state requirements for local government planning and growth management, jurisdictions in the Seattle urban area have developed and employed a number of tactics for implementing their plans. Some of these are local innovations, and all represent practicable programs which can be a source of ideas and experience which could be of value to other communities.

The Seattle urban region consists of four counties: King, Pierce, Snohomish, and Kitsap. These counties surround much of the southern portion of the Puget Sound, which is not only a scenic and recreational asset but provides deep-water harbours serving trade with Pacific Rim countries. This region is bordered on the west by the Olympic Mountains and on the east by the Cascade Mountains. The natural environmental features of this region are cherished by the residents, and have resulted in broad political support for conserving them.

The population of this region is 3.3 million people. This population is 36 per cent larger than it was in 1980, resulting in the growth rate of the region being third among major metropolitan areas in the US. The economy of this region totalled \$ 115 billion in 2000, making it the thirteenth largest in the US. Major firms include Boeing and Microsoft, contributing to its being regarded as one of the four major high tech centres in the country – with Boston, Austin, and the south San Francisco Bay Area.

Local initiatives to implement plans that control sprawl include purchasing conservation easements for lands in agriculture, using transferable development credits, a non-governmental project to purchase and preserve key forest land, use of open space taxation, and public-private partnerships for building transit oriented developments.

Agricultural Lands Program

Agricultural land at the immediate edges of urbanized areas is regarded as a scenic and psychological amenity, can supply fresh products to the urban market, and provides useful wildlife habitat. One approach to conserving lands in agriculture is to designate them as resource lands and regulate them for this use, as required by the Washington GMA. This can be effective when

combined with concurrency requirements and limits on extending infrastructure beyond urban growth boundaries. As noted earlier, however, zoning for low density development can increase rather than curb sprawl.

An innovative program in King County purchases conservation easements on farms to assure that they will remain in open rural use. Residents were alarmed that two-thirds of the prime farmland in this county had been converted to suburban uses between 1950 and the late 1970s, and so approved a \$50 million bond issue to purchase development rights from farm owners. Two hundred farming families choose to participate in this program over the following ten years, selling easements for over 12,000 acres of agricultural land in the county. These permanently open lands reinforce the rural designation in the comprehensive plan and contribute to eliminating further urban sprawl.

Saving farmland from development is only effective if it can continue to support agriculture. Continuing agricultural uses requires markets. For this reason, several of the counties have developed successful programs to supply residents with information concerning produce stands and maps of farms where seasonal produce is available, including dates that crops will ripen. An example is the King County web site: pugetsoundfresh.org. Local governments are sponsoring farmers' markets in a number of locations throughout the region. A number of restaurants make a point of using locally grown organic fruits and vegetables. A new state law will require grocery stores to identify local produce, and another requires it to be used in tax-supported institutions where possible (Dietrich 2002). Each of these initiatives are intended to provide local farms with a direct market that will increase their economic ability to keep land in agriculture, and to encourage more local land being used to grow produce.

Transferable Development Credits

As an alternative to purchasing development rights with public funds, a number of communities in the US have experimented with other means to compensate owners of rural land for permanently transferring their right to develop their property (Alterman, 1997; Kelly, 1993). One such approach involves selling these development credits to owners of property within designated growth areas, which can then be used to build at higher densities

than permitted under the basic requirements of the zoning ordinance (Miller and de Roo, 2000).

King County established such a program in 1999, to encourage owners of large lots outside the urban growth boundary who could legally subdivide it into smaller plots to instead leave it at a rural density. As of this year, the county has qualified or certified twenty sending sites totalling 1,183 acres for 494 credits, all of which provide financial compensation to landowners without selling their land, in exchange for a permanent conservation easement. About 125 development rights are in the permit review process to be applied by developers to sixteen potential receiving sites.

The major difficulty in making programs of this sort work is establishing a market for trading these rights, and in controlling where these credits may be used inside of the urban area. To accomplish this, the City of Seattle has agreed to honour credits from rural King County in permitting high density development in the Denny Triangle, a neighbourhood adjacent to the downtown which is an especially attractive location for high-rise office and residential projects. The county in turn has agreed to fund a number of on-site amenities that will make investment and occupancy in this area even more attractive. In addition to reinforcing the downtown as a commercial and residential location, the city was motivated by an interest in accommodating more than its share of growth in order to reduce demand pressure on areas remaining in rural use.

Land Trades as a Condition of Development

An incentive program, with elements of similarity to transfer of development credits, is being used by several local governments in the Seattle urban region. Owners of larger properties zoned for residential use may apply to build their projects as planned unit developments. Under this designation, they can subdivide the property into a larger number of smaller building lots than normally permitted under the zoning ordinance, thus increasing their gross revenue and saving site development costs by reducing the length of streets and utilities serving these lots. In turn, they must donate a portion of the site to the local government as permanent public open space. The land to be donated is negotiated with the local government and is commonly part of a riparian corridor which is difficult to build on, is often mapped as a critical

area and wildlife habitat by the jurisdiction, and provides an amenity to households who occupy nearby lots.

In a more ambitious and innovative incentive program, King County invites developers to propose projects which are outside of the urban growth area but adjacent to the urban growth boundary. However, for every acre which will be developed, the owner must donate four acres of their property to the county for permanent open space. Begun in 1994, a limit of 4,000 acres was placed on this ‘Four-For-One’ program. So far, 200 acres of developed land and 800 acres of dedicated open space have been added to the urban growth area as the result of this program, and application for projects accounting for approximately 1000 more acres are under review.

Non-Governmental Land Trusts

Several nonprofit organizations such as the Nature Conservancy have programs for purchasing and protecting small properties that are important habitats. They have also purchased conservation easements on lands of exceptional environmental importance, and have solicited as gifts the development rights on lands which owners wish to see permanently kept in open rural use.

Just this year, a very innovative private-sector program has been announced in the Seattle urban region. Called the Evergreen Forest Trust, a coalition of elected leaders, timber executives and conservationists have put together an agreement for the Trust to purchase and preserve a 104,000 acre tree farm in the foothills of the Cascade Mountains, east of the urban growth area in King County (Welch, 2002). The Trust proposes to do this through sale of tax-exempt bonds to be paid for by timber harvests in the forest (Phillips, 2002). To accomplish this, the Trust must gain federal congressional approval to issue tax-exempt Community Forestry Bonds to finance the project (Connelly, 2002).

These bonds would be used to pay the agreed-on fair market value of \$185 million for the property. After careful financial analysis, it has been determined that sustainable timber sales will provide enough revenue to repay these bonds. While most of this land will continue in timber production, since harvest will never exceed 2 per cent per year, it will also support recreation activities and provide wildlife habitat. To protect

ecologically important portions of the site, 20,000 acres have already been designated as off limits for timber harvest.

This public-private partnership will support continued resource use of this land, but with a stewardship plan that is difficult to follow for a firm facing competition and the pressure of regular stockholders. Once established in permanent forest use, the Evergreen Forest will also represent a major regional amenity and a significant means of curtailing urban sprawl. Interest has been expressed from across the US in seeing how the design of this project might be applied in other communities.

Mountains to Sound Greenway

Several people involved in designing the Evergreen Forest Trust project have been involved for over ten years in planning and implementing the Mountains to Sound Greenway. This is a broad corridor on either side of the Interstate 90 highway which runs east from Seattle through Snoqualmie Pass in the Cascade Mountains and on to the east coast of the US. It is an exceptionally scenic route and a major gateway to the Puget Sound region. While this highway passes through the Mt. Baker Snoqualmie National Forest, much of its route west of the Cascades passes through growing urban areas and environmentally critical areas.

Plans for this greenway include preserving the scenic experience from the highway route, conserving the resource and ecological values of land in the corridor, and developing a trail system that supports hiking and biking along the corridor. This has been accomplished by acquiring conservation easements on some land, and through facilitating key land swaps between private owners and the state so that these holdings remain in forestry. Parts of the proposed Evergreen Forest will be maintained in forest as a view buffer from the highway route. The Mountains to Sound Greenway Trust also operates a successful volunteer program for building and maintaining trails, replanting, and environmental education. As a result, it has provided an organizational base for supporting other environmental programs and resisting urban sprawl.

Habitat Protection under the Endangered Species Act

In March 1999, the US National Marine Fisheries Service listed Puget Sound chinook salmon as threatened under the 1973 Endangered Species Act. This is the first ESA listing for an entire metropolitan area.

Listing of a species requires preventing actions which would result in a ‘take’ of that species, which includes killing, injuring or interfering with its essential behaviour. While decline in salmon populations may result from dams preventing their return to birth sites to spawn, from harvest, and from competition from hatchery fish, in this case interference with habitat is the prime concern of those involved in urban development.

This listing has required many large businesses and local and state governments to develop environmental compliance plans which are intended to help them avoid violation of environmental laws and to minimize consequences if violations do occur. King, Pierce and Snohomish Counties are collaborating in developing operational programs and regulations that are in compliance with federal standards for protection of the species, thus providing protection from liability in terms of federal enforcement actions or third-party suits. While final details are still being worked out, it appears that such a program will require that 200 foot buffers of natural vegetation and very little impervious surface will need to be maintained along all rivers and streams in the region, of which there are many. Investigation is underway to determine whether any storm water run off may be allowed to reach these rivers and streams. If not, on-site impoundment will be required, involving a great deal more space that would not be available for development.

While the ESA listing is not a local or state mandated program to implement growth management and to halt suburban sprawl, it may well supersede many of these other programs in impact and precedence. Land that stream habitat protection plans designate as not available for development is often land that is valuable for other habitat and resource purposes. However to the extent that these plans limit contiguous development of urban areas, they may result in more scattered development patterns and thus contribute to sprawl. The King County Council, by a close vote, has gone on record that they will expand the urban growth boundary, as necessary, to avoid any net loss in buildable land. While few other countries have counterparts to the Endangered Species Act of the US, other communities in this country are closely following what is happening in the Puget Sound region in anticipation of listings for other species in other metropolitan areas.

Open Space Taxation

Preferential taxation for land held in resource or other rural use is permitted by a number of states in the US, and employed by many counties. Under programs of this sort, owners who contract to manage their land in open uses such as agriculture or forestry are assessed property taxes on the basis of these uses rather than on the development value of that land.

Counties in the Seattle urban region, as permitted under the Washington State Open Space Taxation Act, offer current use assessments to lands which qualify under a public benefit rating system which assesses the property on a number of criteria, especially on its contribution to watershed protection. Owners commit to participation for a period of time, usually ten years. They must give advanced notice to the county should they decide to withdraw from the program, and then must usually pay back taxes equal to the difference between the use-based assessment and the market-based assessment.

Many owners who have sold their development rights benefit from this program, and these benefits are usually factored in to the purchase price for these easements. Reduced property taxes are an added incentive for property owners who are willing to donate their development rights, wanting the land to stay in open uses. Similarly, this program can benefit owners of land that has been designated in the county plan for rural use and zoned for agriculture or forestry, providing them with a form of compensation. This illustrates how several of these initiatives to control sprawl can complement each other, and can make regulations more acceptable.

Transit Oriented Development

To compete with the convenience of using the private automobile, ways must be found to make public transit easy and attractive to use. One of these is to provide frequent and comfortable service. In the Puget Sound region, each county provides bus service, in most cases with short waiting times and modern equipment. Most highways have lanes designated for exclusive use by buses and carpools, but buses must share other roads with private automobiles. A regional transit agency serving major parts of three counties provides express bus and limited commuter rail service, and has plans to build light rail service through some of the most densely developed parts of the region.

While these features of the transit system are intended to make it a more attractive mode of transportation, additional efforts are under way to make it competitive. A major initiative is the public-private development of transit-oriented developments (TOD). These are commonly higher density developments, usually in mixed use, which are also transit centres where several bus lines converge. People living or working in these TODs find it convenient to choose public transit, and do not have to contend with parking.

The first of these developments, primarily located in or near the business centres of suburban municipalities, are proving to be attractive to home buyers and renters. Plans are underway to encourage higher density developments of commercial property and multi-family housing surrounding the stops of the planned light rail transit line. To accomplish this, the City of Seattle has adopted overlay zoning that applies to these neighbourhoods, and increases minimum permitted densities within the first few blocks of the stops.

Transit oriented developments are a tactic being used by a number of communities in the US, and in fact are a major feature of the new urbanism movement. As used in the Seattle urban region, they are intended to play an important role in almost all of the twenty one urban centres identified in the regional planning policies. In addition to providing an option to single-family housing, TODs are a means of accommodating additional growth in existing urban areas and so reversing the prior trend toward scattered development on land converted from rural uses.

Conclusions

These fourteen initiatives represent a broad range of techniques to manage urban growth in a manner that arrests and even reverses suburban sprawl. Several of these initiatives are required by the Washington Growth Management Act, and these address both planning and implementation. Within this framework, local governments have considerable discretion in how they prepare their plans. Several of these local governments have also demonstrated substantial ingenuity in designing regional policies and programs to implement plans aimed at refocusing development to existing urban areas and protecting remaining countryside.

But in addition to these public efforts, several non-governmental initiatives are based on innovative approaches to conserving open rural uses and thus controlling sprawl. Several of these techniques involve public-private partnerships, including bringing together interests which commonly are in disagreement if not antagonists on issues of property development in the US. In some cases, grounds for agreement and discovery of mutually supporting actions among these usually divergent interests are the result of requirements from higher levels of government. Among the programs presented here, these include provisions of the State GMA, and mandates under the Endangered Species Act.

Since the first local plans prepared under the GMA were adopted in 1994, there has been too little time for these plans and the programs to implement them to have a definitive effect on the location and characteristics of subsequent urban development. Since King County adopted a plan in 1985 that had many of the elements now required by the state, the recent experience of this county provides some evidence for assessing the effectiveness of its growth management program.

In 1995, approximately 19,700 building permits were approved for residential units in this four-county urban region. Of these, 15,250 were for sites within the urban growth area, and 4,450 were for properties outside of the urban growth boundary. Even though almost one-fourth of these permits were issued for sites outside of the urban growth areas, this is a relatively low rate for metropolitan areas in the US, and resulted in part from a flood of applications as the new plans were coming into effect. In this same year, 6,800 permits for residential units inside of the urban growth area and 400 for properties outside of it were issued in King County. This was a higher rate of permits in conformance with the plan than in any of the other three counties.

By 1998, 829 building permits for residential units were issued by King County for existing lots outside of the growth boundary, and over 13,400 were issued by cities and the county for projects within the growth boundary (King County, 2000a). While all but 6 per cent of the total number of these permits are consistent with policies for protecting areas designated for rural use, the new King County plan points to this as a weakness of policy and implementation as well (King County, 2000b). This is because there remain 12,000 vacant lots outside of the growth boundary, and that through legal subdivision approximately 8,000 additional lots could be created. While

zoning designations for agricultural lands call for ten to thirty five acre minimum lot sizes, and an eighty acre minimum lot area for forestry, existing legal lots smaller than these requirements may be built on. Similarly, the rural area not designated for agricultural or forestry use in this county is zoned for minimum lot sizes of two and a half, five, ten, or twenty acres, depending on location.

While preliminary evidence suggests that significant progress has been made toward halting additional sprawl outside of the designated urban growth area, and in concentrating considerable growth in a number of urban centres, especially in King County, it is probably too soon to fully assess the effectiveness of this new strategy for growth management. Likewise, there is too little evidence to evaluate the success of each of the fourteen elements of this strategy which are presented in this paper.

Even so, this combination of state-mandated and of locally-initiated tactics do serve to complement each other in accomplishing growth management. They also illustrate a range of approaches that define much of what is possible under the legal systems of the US, and represent in many cases implementation programs that are among the most advanced in this country. Consequently, the experiences gained by local governments and by non-governmental organizations in the Seattle urban region are being looked to as prototypes by other American communities. These designs and the experience with them can also serve as a source of ideas for communities in other countries to consider in designing their own programs, fitting their own legal and cultural contexts.

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Chapter 16

Immigration and Densities: A Contribution to the Compact Cities and Sprawl Debates

Chang-Hee Christine Bae

Introduction: The Public Policy Context

This paper focuses on the intersection between two very important public policy issues, international immigration and metropolitan sprawl, that superficially might seem, at best, loosely connected. It also, by inference rather than by being explicit, raises the question of how to bridge the gap between some public perceptions (including interest group positions) and demonstrable research findings. It makes no attempt to answer this latter question, but how to communicate the results of planning research to change the orientation of public policy debates remains vitally important.

Controlling population growth has intermittently erupted as a policy option in the efforts to fight sprawl, for example, in Sierra Club discussions. The Club leadership has sporadically attempted to ban the topic, recognizing that the liberal white middle class that is the core of its support is uncomfortable pursuing a path that leads to a call for limitations on immigration. An attempt to craft a compromise ballot initiative that would unite the membership around a policy that recognized the role of population growth (and, implicitly, immigration) in sprawl eventually failed, but a sizable proportion of the members continues to grumble.¹

The interest group, FAIR (Federal Alliance for Immigration Reform), on the other hand, has more recently embraced the popularity of the combating sprawl argument as a powerful weapon in its fight for tougher immigration controls. Other fringe groups demonstrate a similar xenophobia. Consider, for example, a full-page advertisement in the New York Times, May 31, 2001, p. A21, by an organization called DASA (Diversity Alliance for a

Sustainable America),² whose most prominent members are Richard D. Lamm, the former Governor of Colorado, and Gaylord Nelson, the founder of Earth Day. Under the headline of ‘Why Do We Have an Energy Crisis?’ there is the following quotation from the advertisement: ‘The energy crisis, like traffic congestion, *urban sprawl* and overcrowded schools, is exacerbated by population growth. Nearly 70 per cent of current population growth in this country is immigration-related. It’s therefore imperative that President Bush and Governor Davis advocate a sustainable immigration policy (my italics).’

Paul Krugman from Princeton University reported in a syndicated column (Krugman, May 24, 2001) that he had received a mound of correspondence that argued ‘vehemently, that the real culprit behind urban sprawl is population growth, and that therefore it’s all because of immigration.’ It was a little reassuring in this climate that President Bush appeared to be a relatively strong immigration advocate (perhaps in part the result of his rapprochement with President Vicente Fox), at least before the World Trade Centre attack that may have a chilling effect on any attempts to liberalize immigration policy.

The Academic Context

In a more academic setting, with very different conclusions, Fulton *et al.* (2001, p. 11) have suggested that ‘the single most important variable in explaining differences among metro areas’ density change from 1982 to 1997 was the share of 1990 residents who were born abroad’ and continue that ‘efforts by anti-immigration groups to link sprawl with immigration are misguided.’ This paper supports this position, and is a direct follow-up to their suggestion that ‘(w)e need to explore the dynamics of immigration and density in more detail.’ Their report is a broad overview touching on many aspects of demographic factors related to sprawl, so it would be unrealistic to expect a detailed analysis of the immigration-sprawl relationship. Nevertheless, their regression analyses showed that the foreign-born population share was a major variable explaining 1997 densities, density changes between 1982 and 1997 and urban land changes between 1982 and 1997. All these results indicate that immigration is negatively correlated with density, and hence probably with sprawl. However, the sole immigration

variable used in their report is the foreign-born percentage of population in 1990.

One purpose of this paper is to suggest some more refined variables to explore this relationship and to provide a broader context for the discussion. It avoids the interesting but more complex issue of the measurement of sprawl by focusing on density and land consumption measures. It does not pretend or claim to provide a comprehensive explanation of sprawl. Instead, it confirms the positive association between immigration and density, but also highlights the negative correlation between density and incomes and the positive relationship between density and land (house) prices. The major implication for planners is the need to justify anti-sprawl strategies on rational not specious arguments.

Yu (2001) has provided some evidence on demographic and housing influences based on national-level metropolitan data for the 1980–1990 period. Immigrant arrivals after 1980 accounted for 45.8 per cent of national population growth between 1980 and 1990 (and is somewhat offset by the negative contribution of settled migrants [-4.3 per cent] via attrition). But the total immigrant contribution to the rate of household formation (the key determinant of housing demand) was much less, only 24.9 per cent. At the same time as household size was increasing among immigrants, it was declining among the native-born. In addition, recent immigrants are more likely to choose to live in central cities, more likely to be renters (and rental housing is disproportionately found in the central cities), and are more likely to use transit. Given the role of new housing construction in generating sprawl, the native-born occupied more than 90 per cent of the new housing stock built between 1980 and 1990, while recent immigrants absorbed only three per cent (Yu, 2001, p. 20).

In a study of more recent data, Borjas (2000) has also highlighted the homeownership gap between the native-born and foreign-born households. By the year 2000, it had widened to 20 percentage points (67 per cent against 47 per cent), five percentage points wider than ten years earlier. The gap is even wider in certain local housing markets, the most extreme being 30 per cent in Orange County, California. In 2000, only 14.5 per cent of immigrant households who had arrived in the previous five years owned their own homes, whereas in 1980, 19 per cent of recent immigrants were homeowners.

Thus, recent immigration primarily impacts the higher-density rental market³, at least in the short and medium runs.

In addition, Myers (2001) has speculated about how the growth of the Latino population might affect compactness and density in California. The main focus of his paper is the future, and its most interesting question is about the rate and degree of cultural assimilation of the immigrant population. Will the settlement pattern and housing choices of the next generation of immigrants be indistinguishable from those of Americans without a recent foreign-born lineage? Similar results, based on past behaviour, have been suggested by Richard Alba, John Logan and others (e.g. Alba, *et al.*, 1999; Alba, *et al.*, 1994; Alba and Logan, 1992; and Alba, *et al.*, 1991). This paper deals only with the present and the recent past, and does not address the future. But if the density benefits from immigration are temporary, it would be ironic if the anti-immigration lobbies adopted the argument that we must stop immigration now, not because immigrants are ‘strangers’ but because of the dangers that they will soon become just like ‘us’ and replicate our residential location behaviour and consumption choices.

The Residential Behaviour of the Foreign-Born Population

There are substantial amounts of information about the foreign born, for both 1997 (Costanzo, 2000) and for 2000 (Lollock, 2000). They have much larger families (27 per cent have households larger than five persons, more than double the native-born share), primarily because of the higher fertility of Latinos, who account for more than one-half of the foreign born. They are not equally distributed geographically, but are over-represented in the West (39.9 per cent of the foreign born live there compared with 20.8 per cent of natives) and underrepresented in the Midwest (10.7 per cent compared with 24.6 per cent).⁴ In particular, they are heavily concentrated in selected metropolitan areas (e.g. Miami, Los Angeles, San Francisco, New York and Chicago, with foreign-stock shares of 60, 53, 43, 42 and 28 per cent respectively) that are generally high-density locations, primarily the result of long-established land prices.⁵ With higher poverty rates (17 per cent of the foreign born compared to 11 per cent of the native born), the foreign born are much more likely to live in higher-density apartments than in single-family homes. However, there is some evidence of upward mobility within a

generation, as immigrants converge to the income and homeownership levels of natives (Myers and Lee, 1996). In terms of urban vs. rural locations, the foreign born are more concentrated in the central cities than the American born (45.1 per cent as against 27.5 per cent) and much less concentrated in non-metropolitan areas (5.1 per cent relative to 20.7 per cent); the proportions in the suburbs are more or less the same.

These descriptive statistics suggest that the foreign-born are very different in many respects from the native born, and this equally applies to their household size decisions, residential location and housing choices that are key in assessing their role in densities (and sprawl).

Data

The 1997 data on immigration used in this research are from the Current Population Survey (CPS); this makes a convenient match with the National Resources Inventory (NRI) land use data that have been recently made available to measure trends in urban developed land between 1982 and 1997.⁶ However, the sample size problem in the CPS (Schmidley and Robinson, 1998) requires limiting the analysis to forty one-million plus metropolitan areas (in some of the tests, Greensboro, North Carolina, and Providence, Rhode Island, are excluded because of gaps in the data sets, as is Boston because of its unusual definition of what constitutes a CMSA). Whether interpolated estimates based on the 1990 and 2000 Censuses would be preferable to the 1997 CPS estimate is a question that currently cannot be answered because the foreign-born component of the 2000 Census is only gradually being released. Comparison of the foreign-born estimates from the 1997–2001 CPS lends some credence to the reliability of the 1997 estimates: the year-to-year changes look plausible, and the percentage of foreign-born population remained stable from year to year.⁷

Fulton *et al.* (2001) use the 1990 foreign born population estimate as a proxy for immigration. In this paper, I consider three alternative immigration measures and three alternative sprawl measures. Table 16.1 shows the basic data for the alternative immigration and sprawl measures.

The first immigration measure is the 1997 CPS estimate of the foreign-born population share in each metropolitan area. The range of variation is

wide, from 1.6 per cent in Pittsburgh (with very low shares also found in Greensboro, Cincinnati, Norfolk, Indianapolis, and New Orleans, and St. Louis, among others) to 38.6 per cent in Miami (Los Angeles had a 30.6 per cent foreign born share, while the shares in San Diego, New York and San Francisco were above 20 per cent; the next in rank were Houston, Phoenix and Orlando). The numbers confirm the generalization that the foreign born gravitate to larger cities, to California, Florida and to States on the border with Mexico.

The second measure is the increase in foreign born between 1982 and 1997 as a proportion of the foreign born stock of 1982. This is a proxy for immigration during the 1982–1997 NRI data period. It is not wholly accurate because a person recorded as foreign born during this period in a particular metropolitan area may have migrated to or from another metropolitan area, even prior to 1982; hence, foreign-born internal migrants will be reflected in these numbers. Also, the foreign born stock of 1982 is depleted over the analysis period from deaths which offset, to varying degrees, the foreign-born increase from new immigration. Nevertheless, the estimates are reasonable. The 1982 estimate is based on an interpolation between the 1980 and 1990 Censuses, not straight-line but based on the fluctuations in official INS immigration data in the 1980s. Of course, the foreignborn estimates used in this paper are undoubtedly underbounded because the undocumented immigrants are underrepresented in all the data sets. Also, the underestimation is probably skewed, being greater in the larger cities with high proportions of foreign-born that provide sustenance to the undocumented via the ‘friends and relatives effect.’

Table 16.1 Basic data on immigration and sprawl in US metropolitan areas

	(a)	(b)	(c)	(d)	(e)	(f)
Metropolitan Area	Foreign Born 1997 (%)	Foreign Born, 1982–1997 /Increase Foreign Stock, 1982	in Foreign Born, 1982 /Increase Prop Increase 1982–1997	Pop Density in 1997 /1997 Density consumption	Changes in land minus pop growth impact	Changes in consumption plus pop growth impact

							1982–1997 (%)
Atlanta,	GA	4.7074	2.0765	0.0843	2.74	-11.47	25.58
MSA							
Boston-		7.8805	0.2602	-0.2022	n.a.	n.a.	n.a.
Worcester-							
Lawrence,							
MA-NH-ME-							
CT CMSA							
Buffalo-		4.5924	-0.1889	0.2636	5.74	-14.97	129.94
Niagara							
Falls,	NY						
MSA							
Charlotte-		4.3638	3.3239	0.1251	2.41	-21.42	50.41
Gastonia-							
Rock Hill,							
NC-SC MSA							
Chicago-		11.9543	0.3223	0.3341	5.96	-12.89	62.92
Gary-							
Kenosha, IL-							
IN-WI CMSA							
Cincinnati-		1.8002	0.1296	0.0214	3.70	-22.39	74.90
Hamilton,							
OH-KY-IN							
CMSA							
Cleveland-		3.6975	-0.2479	0.0852	3.96	-33.93	138.58
Akron, OH							
CMSA							
Columbus,		4.4963	1.4016	0.1766	3.44	-13.63	51.51

OH MSA

Dallas-Fort Worth, TX CMSA	9.5299 1.9704	0.1925	3.54	-2.95	8.47
Denver- Boulder- Greeley, CO CMSA	8.2272 1.5516	0.2156	4.52	-7.53	25.99
Detroit-Ann Arbor-Flint, MI CMSA	6.8567 0.2579	0.3233	4.10	-18.42	83.86
Greensboro- Winston- Salem-High Point, NC MSA	1.4963 0.7775	0.0354	2.71	-18.67	55.40
Hartford, CT MSA	10.58910.6135	1.5081	3.97	-14.67	86.56
Houston- Galveston- Brazoria, TX CMSA	15.29211.5186	0.4483	3.40	-8.60	31.39
Indianapolis, IN IN MSA	2.4761 0.8630	0.0769	3.55	-15.11	54.39
Kansas City, MO-KSMSA	4.0315 1.2687	0.1516	3.73	-14.38	53.04
Los Angeles-Riverside-	30.20160.9749	0.6275	8.31	2.76	-12.75

Orange
County, CA
CMSA

Memphis, 3.0645 1.7910 0.1353 3.45 -30.55 75.16
TN-AR-MS
MSA

Miami-Fort 39.23620.9122 0.7922 7.93 -3.86 14.54
Lauderdale,
FL CMSA

Milwaukee- 4.8333 0.2506 0.1579 3.93 -14.69 73.73
Racine, WI
CMSA

Minneapolis- 6.8312 1.6449 0.2081 3.79 -22.37 58.52
St. Paul, MN-
WI MSA

New Orléans, 3.0422 -0.1303 0.3180 5.28 -20.86 105.75
LA MSA

NY-No. NJ-22.12800.5896 1.0514 7.32 -14.59 68.63
Long Island
CT-PA
CMSA

Norfolk- 2.4400 0.2624 0.0267 4.00 -21.03 58.35
Virginia
Beach-
Newport
News, VA-
NC MSA

Orlando, FL 10.93003.0175 0.1944 3.49 -15.40 30.12
MSA

Philadelphia-	6.1892	0.3262	0.7754	4.65	-25.83	94.66
Wilmington-						
Atl City, PA-						
NJ-DE-M						
CMSA						
Phoenix-	13.1901	3.0756	0.2368	6.58	16.45	-50.63
Mesa,	AZ					
MSA						
Pittsburgh, PA	1.6303	-0.4892	0.2133	3.51	-34.66	116.01
MSA						
Portland-	10.8319	2.2780	0.3178	4.84	-11.61	35.68
Salem, OR-						
WA CMSA						
Providence-	11.0250	0.0349	0.0477	5.65	-11.26	61.93
Fall River-						
Warwick, RI-						
MA MSA						
Rochester,	6.4656	0.2302	0.2913	4.43	-14.35	80.14
NY MSA						
Sacramento-	10.2009	1.0148	0.1639	5.55	-2.84	8.54
Yolo, CA						
CMSA						
St. Louis,	2.9192	0.4465	0.1447	3.82	-14.46	73.08
MO-IL MSA						
Salt Lake	7.5077	1.4753	0.1943	5.00	-13.65	40.70
City-Ogden,						
UT-MSA						
San Antonio,	7.8416	0.4551	0.1033	4.47	-7.45	25.32

TX MSA

San Diego,22.53791.2957 0.4632 7.50 -4.33 14.14
CA MSA

San Francisco-
Oakland-San
Jose, CA
CMSA

Seattle-
Tacoma-
Bremerton,
WA CMSA

Tampa-St. Petersburg-
Clearwater,
FL MSA

Washington-
Baltimore,
DC-MD-VA-
WV CMSA

Source: US Department of Agriculture, *National Resources Inventory, 1982, 1997*

Metropolitan areas with high scores on this measure have experienced high rates of international immigration in the past decades; most of those with indices around 2.0 or more are located in the West or the South. Conversely, those metropolitan areas with low scores (less than 0.5) are located in the Northeast and the Midwest. The regional differentiation is very strong, although there are a few exceptions (e.g. Columbus and Minneapolis). A few metropolitan areas (Buffalo, Cleveland, New Orleans and Pittsburgh) have a negative score on this index, primarily reflecting low immigration being outweighed by mortality among the older foreign born. The other interesting point is that some of the higher scores on this index are found in metropolitan

areas with modest foreign-born shares, such as Atlanta, Charlotte and Memphis (although they are experiencing quite rapid growth). This is firm evidence of recent international immigrants dispersing into new areas.

The third measure is the increase in foreign born, 1982–1997, as a proportion of the increase in total population at the metropolitan level; this measures the immigration component of population change. This is more difficult to interpret because a slow-growing metropolitan area (such as Philadelphia) might show a high foreign-born contribution simply because its population growth was slow (although Philadelphia has a modest foreign-born share, the foreign born accounted for 78 per cent of its population growth). New York also falls into this category; without the increase in the foreign born, its population would have declined (hence, its index of 1.06). The other high foreign-born population increase shares are found in the fast-growing and high-immigrant metropolitan areas of Miami (79 per cent) and Los Angeles (63 per cent). On the other hand, in some metropolitan areas, such as Cincinnati, Greensboro, Norfolk and Seattle, the foreign-born contribution to population growth was minimal.

The purpose of this paper is not to suggest sophisticated measures of sprawl, but to focus on densities as a common proxy for sprawl. Recently, there have been some very interesting and important attempts to adopt multidimensional measurements (e.g. Galster *et al.*, 2001, Pendall *et al.*, 2000, and Torrens and Alberti, 2000). Such research includes measures in addition to density, such as continuity, concentration, compactness, centrality, nuclearity, connectivity, scatteration, diversity and proximity. These extensions of the sprawl concept are very welcome, but beyond the scope of this paper. The analysis here confines measurement to the core measure of densities and density changes (to take advantage of the NR1 database that yields more sophisticated data than the Census urbanized area measures). It is somewhat of a subjective decision as to how well these density measures represent sprawl. However, the fact is that many of the alternative measures are highly correlated with density variables.

As for the sprawl proxies, two are straightforward: density in 1997 (population per acre of *developed* urban land using the NRI database as the denominator) and change in these densities, 1982–1997.⁸ These density measures are quite different from those that would be obtained by dividing population by a metropolitan region's urbanized area, because the NRI data

pinpoint the parts of the urbanized area that have, in fact, been developed. The density measures show a wide range, varying by a factor of 3.5. Also, three of the top five densest metropolitan areas (Los Angeles, San Francisco and San Diego) are located in California, all of them not only with high foreign-born shares but also high land prices.

It is not surprising that low-density metropolitan areas tended to experience the highest percentage declines in densities between 1982 and 1997. Only Phoenix (by 16.5 per cent) and Los Angeles (by 2.8 per cent) showed density increases. Other California metropolitan areas (Sacramento, San Francisco and San Diego) had modest density declines, as did Dallas, Miami, San Antonio, Houston and Denver. On the other hand, about a quarter of the metropolitan areas experienced huge density declines, in excess of 20 per cent, occasionally greater than 30 per cent. Most of these had very modest population growth over the 1982–1997 period as well as low foreign born shares. These are the truly sprawling metropolitan areas.

A third measure is an attempt to separate out the population growth contribution from the increased land consumption component of sprawl. It subtracts the contribution of population growth (by assuming that the increase in population between 1982 and 1997 takes place at the metropolitan density of 1982) from the increase in urbanized land during the same period (using the NRI land use data), and expresses this as a proportion of the increase in the urbanized land area between 1982 and 1997. The resulting measure is a proxy for the contribution to sprawl of increased land consumption per capita by both the pre-1982 population and the increment in population between 1982 and 1997. The increase in population at 1982 densities measures the ‘pure’ population effect.

This is, by far, the most interesting of the sprawl proxies, in part because it suggests the need for care in generalizing about universal results. First, how should this measure be interpreted? The answer is the higher the percentage, the greater the contribution of land profligacy. In those metropolitan areas where the index is above 100 per cent (occasionally above 200 per cent), population declined, so the area of urbanized land expanded despite the absence of population pressure. At the other extreme, two metropolitan areas (Los Angeles and Phoenix) have negative pure land consumption increases. This means that population density increased, and the amount of land urbanized was less than that resulting from the population increment (assuming 1982 densities). Several other metropolitan areas (in

the West or South), such as Dallas-Fort Worth, Sacramento, Miami, San Diego, and San Francisco have land consumption indices less than 20 per cent. Even Atlanta, so often excoriated as the epitome of urban sprawl, has an index of less than 26 per cent; this means that urban land absorption was much more because of population growth than increased land consumption per household (population densities declined less in Atlanta between 1982 and 1997 than in 23 of the metropolitan areas in the sample). This implies that those who have suggested that population growth contributes to sprawl can find metropolitan examples to support their position. Rarely, however, as shown by the Atlanta case (with its small foreign-born population), has this anything to do with immigration.

In a supplementary analysis of comparing housing opportunities (and their components: house prices and incomes) and immigration, and their changes, as influences on densities, the year 1997 and a shorter time period (1992–1997) were used, because of data limitations (1991 was the first year for the housing opportunity index).

Tests

Three kinds of tests were undertaken to explore the relationship between immigration and sprawl. The first was a set of simple regressions of the immigration indices on the sprawl measures to indicate the degree of correlation between these. The second was cross-sectional tests of 1997 data to examine the relationship between density (a proxy measure for sprawl) and not only immigration, but also income and house prices (that closely reflect land prices), with a transportation congestion variable as a control measure. The third test was to undertake a very similar test to the second, but this time dealing with changes between 1992 and 1997. There is no attempt in this paper to provide a comprehensive explanation of the determinants of sprawl, but rather to explore the relationship between immigration and density (and possibly sprawl).

This paper does not report in detail on all these tests; some of them were revealing, others less so.⁹ I focus on the second test, an alternative hypothesis that suggests that land (and housing) prices and incomes may be key variables explaining densities rather than immigration. This was tested with 1997 data. As shown in [Table 16.2](#), the key result is conclusive.

Metropolitan areas with a high proportion of immigrants are more rather than less dense. In addition, metropolitan areas with low land and house prices and with high incomes tend to sprawl much more. Three variables (percentage foreign-born, median income [this variable is on the margin of significance], and median house price) explain more than 70 per cent of the variation in metropolitan area densities. There is no way to interpret these results in terms of an argument that immigration contributes to low-density development.

Table 16.2 Determinants of population density in 1-million plus US metropolitan areas

	Coefficient	t-statistic
Intercept	4.105	3.82
Foreign Born (1997)	0.116	5.80
Median Household Income (1997)	-0.052	1.92
Median Housing Price (1997)	0.017	3.28
Adjusted R ²	0.701	

Source: Calculated by author

Other variations of this test added the Texas Transportation Institute indices of travel time or road congestion for the year 1997 as alternative control variables for the idea that there may be an association between density and traffic congestion. In fact, these variables did not add explanatory power. This finding may be consistent with criticisms of the TTI indices that they are inadequate measures of system-wide congestion (Gordon and Richardson, 1994), or it may reflect the lack of association between density and traffic congestion, except perhaps at the very local level.

The third set of tests looked at changes in all these variables between 1992 and 1997 (the range of dates was set by the dates of the NRI data [1992–1997] and the NAHB initial date for metropolitan house prices, 1991). These results are not reported in detail. The signs on the coefficients were as expected, but the coefficients themselves were statistically

insignificant, and the degree of explanatory power of the equations was quite low. The most likely explanation is that a five-year period (1992–1997) is too short for trying to explain changes in densities and land consumption because the key characteristics of the built environment change very slowly.¹⁰

Intra-Metropolitan Distribution

The reason why suburban densities are higher in high-immigrant MAs is interesting. Both immigration and high land prices (implying high densities, reflecting the laws of demand) are the result of strong economic growth. The data in [Table 16.3](#) illustrate another important point: how the central city vs. suburban immigration shares have changed over time. Prior to 1970, 55.2 per cent of the foreign born lived in the suburbs. This share has slid in recent decades. By 1997, the central city and suburban foreign-born shares were almost identical, at 46.7 per cent; the balance (5.6 per cent) lived in nonmetropolitan areas. One reason for this shift is that prior to the 1970s, most of the foreign born came from Europe (e.g. 50.2 per cent in the period 1955–1964). Since then, Asian and Latin American immigrants have dominated (in the period, 1995–1997, Asians accounted for 34.6 per cent of immigrants, while the American Continent (including Canada, the Caribbean and South America as well as Mexico and the Central American countries) accounted for 53.7 per cent of immigrants at its peak (1985–1994; US Department of Justice, 1998). These groups (especially the Latinos) were more likely to immigrate into the central cities rather than the suburbs, at least initially, primarily because of income constraints. Of course, increased suburbanization reflects assimilation as well as region of origin. In total, the foreign born are equally divided between the central cities and the suburbs, whereas about 70 per cent of the metropolitan total population now live in the suburbs.

Table 16.3 Foreign-born population in US metropolitan and non-metropolitan areas by date of entry, 1997 ('000s)

Date of Entry	Central Cities	Suburbs	Non-Metro Areas	Total
Post-1990	3,892	3,171	475	7,539

%	51.6	42.1	6.3	100
1980–1989	4,117	4,039	398	8,555
%	48.1	47.2	4.7	100
1970–1979	2,242	2,467	226	4,935
%	45.4	50.0	4.6	100
Pre-1970	1,797	2,620	332	4,749
%	37.8	55.2	7.0	100
Total	12,048	12,297	1,431	25,778
%	46.7	47.7	5.6	100

Source: US Bureau of the Census, Population Division, Ethnic and Hispanics Statistics Branch (2000), *Current Population Survey, 1997*.

The Anti-Immigration Case and Its Defects

The thesis of those who link immigration as a major contributor to sprawl is simple. Population growth is a more important source of sprawl than increasing land consumption per household. International immigration is a major contributor to population growth. Hence, limitations on immigration can dramatically reduce the negative impacts of the sprawl impact. The argument appears compelling and plausible at first sight, but it is naïve and inconsistent with the facts. The evidence in this paper points to several contrary findings. The increase in metropolitan populations is not strongly correlated with high rates of conversion of land for urban development. Many slow-growing metropolitan areas have absorbed proportionately huge amounts of land, such as Buffalo, Cincinnati, Cleveland, Memphis, New Orléans and Pittsburgh. The correlation of immigrant population shares with population densities is strongly positive, *both* at the central city and the metropolitan level. Aggregate data belie the wide variety of experiences

from city to city, and within metropolitan areas. Spatially disaggregated data would permit assessment at the individual MSA level. This is important because international immigration is non-uniform over geographical space. The arrival of the 2000 Census PUMS (Public Use Micro Sample) data in 2003 will facilitate this analysis. Some of the MSAs in some regions have very low densities and low immigration shares. House prices (reflecting land prices) rise slowly because their economies perform modestly. Low land (and house) prices imply more land consumption, and this means low densities. Densities (and total population) have increased in the central cities of MSAs experiencing high immigration. However, these locations have not benefited from new construction. Instead, the immigrants crowd into the existing housing stock. Higher densities reflect more persons per dwelling rather than more dwelling units per acre. Also, demographic factors (larger household size and higher fertility rates) affect these densities.

When recent immigrants experience upward mobility, they often replicate the behaviour of the native born, at least in California (Myers, 1999 and 2001). Upward mobility in terms of income is matched by geographical mobility into the suburbs. Because this affects only a proportion of the immigrants, clusters remain behind in the central city (and these remain high density because of the flow of new immigrants) while new low-density clusters are created in the suburbs. As an example, Koreatown near downtown Los Angeles has now, despite its name, an overwhelmingly Latino residential population. The businesses are still primarily Korean, but their owners live in suburbs such as Garden Grove, Cerritos, Fullerton, Walnut and Diamond Bar. Also, in Los Angeles Fulton *et al.* (2001, p. 12) argue that: ‘immigrant and non-Anglo populations, many of which have modest incomes, are increasing household sizes and doubling up in existing areas, thereby increasing the population density even though the physical fabric does not change very much.’

They also suggest that ‘some declining cities have begun to study the possibility of attracting foreign-born immigrants to their thinning neighbourhoods’ (Fulton *et al.*, 2001, p. 18). This argument for a possible strategy of how to revive the central city may be inconsistent with the fact that most new immigrants are poor and add more to the demand for central city services (except in rare circumstances such as the entry of Iranians into Beverly Hills after the late 1970s or wealthy Hong Kong residents into Vancouver in the 1980s and early 1990s). Attracting foreign-born immigrants

as a strategy to save large central cities, especially in fiscal terms, may be problematic. However, it might be a more viable strategy in the smaller cities that fall outside the scope of this paper (where the native-born tend to have more modest incomes, where the immigrants may not be significantly poorer, and where public safety, education and other public service costs may be lower).

Planning Implications

Why is this analysis of potential interest to urban planners? First, if we accept that density is an approximate proxy for other measures of sprawl, few could challenge the view that the sprawl debate has, for better or worse, become a core issue in planning. Second, to understand sprawl, we need a better understanding of its sources. The idea that population growth contributes to sprawl, and if so then immigration contributes to sprawl, seems rather obvious; thus, it seems important to subject this hypothesized relationship to closer scrutiny. Third, the implication that many immigrants live at high densities in tight housing markets reinforces the case for more attention to the affordable housing crisis in high-cost locations. Of course, this is not merely an immigrant problem but a low-income household problem. Fourth, because immigrants continue to concentrate in ‘gateway’ metropolitan areas (despite a moderate degree of subsequent dispersal), their pressure on infrastructure and public services is becoming a critical planning issue. Fifth, from an anti-sprawl perspective, most immigrants were (prior to their entry into the United States) accustomed to living in high-density living environments. If developers were more proactive with ‘smart growth’ projects, immigrant households may make an easier demand match to the new sources of supply. Sixth, and more generally, the United States continues to have a reasonably liberal immigration policy (by world standards), so immigration is apparently destined to be a major stimulus to future population growth. Regardless of its implications for densities (or sprawl), future immigration will continue to place extreme pressure on planning resources (e.g. housing, education, health) at key locations, such as in California and New York.

Conclusions

The aim of this paper has been modest. It is not intended to examine the determinants of sprawl, but has a much narrower focus: the relationship between immigration and densities (as a correlate of sprawl). As pointed out at the beginning, a common argument is that population is a major contributor to sprawl, immigration accounts for a sizable fraction of the increase in population, hence immigration leads to sprawl. This research has suggested that there is little truth in this argument. First, although population growth does increase the demand for land, it is more often associated with other forces, such as strong employment (and income) growth and higher land (and house) prices, that induce developers to supply housing at higher densities than in the absence of robust population growth. Second, trends in rising land consumption per capita (and hence declining densities) are more evident in metropolitan areas exhibiting slow population growth (and little immigration) that are characterized by low land (and house) prices. Third, recent immigration (although it is now dispersing more than in the past) is skewed towards a limited number of metropolitan areas, most of which are relatively high-density and are either becoming more dense or are sprawling much less than the national metropolitan average. Fourth, the household size of immigrants is significantly larger than that of the native-born (Latino-origin households are typically about twice as large as the white and African-American native born) so that immigrants contribute to higher dwelling densities independently of land consumption effects. Fifth, at the large metropolitan level, immigration and density levels and changes are positively, not negatively, correlated. Sixth, immigrants are initially more likely to live in the central cities than in the suburbs when compared with the native-born, and hence contribute more to compactness; they provide an important offset to suburbanization and exurbanization trends. However, in the longer run (e.g. because of inter-generational effects) many of them may begin to adopt the lifestyles and the residential preferences of the native-born (because they are then either native-born or came to America so young that they behave like the native-born). Finally, and above all, it is wrong to use the need to control sprawl as a rationalization for anti-immigration policy, or to adopt an anti-immigration stance to justify sprawl control policies. There are much better arguments for anti-sprawl strategies, while discussions of immigration policy need to be based on a sounder footing.

¹ A 1998 ballot garnered 40 per cent support for population stabilization (and immigration reform). The April 2001 ballot obtained 46 per cent support (although only 9.8 per cent of the membership voted). A separate sub-group has been established among the Sierra Club membership, SUSPS (Sierrans for US Population Stabilization).

² See <http://www.diversityalliance.org> for more details. There are many other similar groups (e.g. Limits to Growth, Numbers USA, Negative Population Growth, the Carrying Capacity Network, and the ‘independent, non-partisan’ Center for Immigration Studies), most of them operating out of Washington, DC and occasionally giving testimony to Congress).

³ It is not surprising that among large cities Los Angeles has the second lowest homeownership rate in the country (39 per cent) behind New York City, while Los Angeles County has the lowest homeownership rate (49 per cent) of any metropolitan county west of the Mississippi (Guerra, Marks and Brackman, 2001). High land prices and low immigrant incomes provide a killing combination for homeownership growth.

⁴ There are also significant regional differences in declining densities, 1982–1997: Midwest, -19.03 per cent; Northeast, -23.14 per cent; South, -23.42 per cent; West, -11.23 per cent; compared with the United States average of -20.47 per cent (Fulton *et al.*, 2001).

⁵ Newbold and Achjar (2002) use a different source (a pooled-cross-section of INS microdata over the period 1980–1990) to obtain similar results. The intended destinations of the 2.35 million new legal adult immigrants who entered the United States between 1980 and 1990 were overwhelmingly the large metropolitan areas, with 45 per cent headed for three metropolitan areas (New York, Los Angeles and San Francisco). Only 30 per cent intended to move to destinations outside the 25 largest metropolitan areas.

⁶ I gratefully acknowledge the provision of the 1997 data prior to publication by Henry Bogusch of the United States Department of Agriculture Office in Austin, Texas. Publication had been delayed by concerns about margins of error related to sample size. These should not affect the large metropolitan areas discussed in this paper. These data are the new revised numbers. The data published in 1999 had to be withdrawn because of major errors related to a computer glitch.

⁷ These data were kindly supplied by Dianne Schmidley of the Census Bureau, although they can be extracted from the individual CPS reports.

⁸ My numbers show minor differences with those reported by Fulton *et al.* (2001). These primarily reflect differences in the derivation of the intercensal population estimates. Also, I used 2000 MSA definitions; they used 1990 definitions. This makes a difference in a few cases.

⁹ In terms of simple regressions, the 1997 foreign born share explains 63 per cent of the variation in metropolitan population densities; using the other measures in Table 1 results in lower R²s, in the 0.17–0.39 range, but still rather impressive (and all statistically significant). The results confirm the basic hypothesis of this paper. Immigration is not a source of sprawl; on the contrary, those metropolitan areas with high scores on the immigration measures are among the densest. Conversely, those metropolitan areas that were profligate in consuming land had small proportions of foreign-born and modest increases in their immigrant populations.

¹⁰ The Portland experience illustrates this point very well. Portland Metro has pursued an aggressive strategy of densification for many years, but its average densities still remain low in comparison to many metropolitan areas.

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Chapter 17

Transit and Density: Atlanta, the United States and Western Europe

Alain Bertaud and Harry W. Richardson

Introduction

The counterpoint to the correlation between low-density sprawl and automobile dependence is that between high density and more transit use. These correlations are in general empirically supported, and while the United States is the exemplar of the first correlation, much of the rest of the world is representative of the second. However, this chapter does not focus on this somewhat banal observation. Rather, it is concerned not with statics but dynamics, not with description but with policy. With special attention to the Atlanta metropolitan area, although the arguments can easily be extended to other US metropolitan areas, the key questions are: Can a city increase transit use and decrease automobile dependence by increasing densities? Or, would an increase in the supply of public transit result in increase densities? Of course, there are important feasibility issues here. How long does it take for a city, via changes in zoning ordinances and other measures, to affect a significant increase in densities? Does a city have access to the fiscal resources (from the local to the Federal) to invest enough in public transit to influence densities?

Background Evidence

The literature on transportation and land use has emphasized the interdependence between the two, and it is a two-way street: transportation can influence urban form, and urban form may affect travel behaviour. However, the benefits from a land use (densification) approach are probably modest. First, the settlement pattern is largely determined so changes in land use are marginal, although there is some debate about how large that margin may be (e.g. in newly developed suburban areas, revitalized core areas and infill development). Second, travel behaviour (although difficult to change in the United States, even with major new transit investments) may be more susceptible to policy interventions than land use preferences. Third, contrary to common belief, any visit to European or Asian cities confirms that compact cities (and their high densities) do not fully mitigate the reliance on automobiles; in fact, automobile dependence is increasing not declining. This is because for all those who can manage their lives in such an environment without

automobiles there are many others who will not. Fourth, both land use changes and transit investments are very costly, the former primarily because of high regulatory costs. Fifth, there is little evidence that higher densities in the United States have had much impact on automobile ownership or vehicle miles travelled, although they might encourage additional non-motorized trips (Boarnet and Crane, 2001).

The case for public transit has been skewed geographically. Newman and Kenworthy (1999), and many others, have largely used statistical data from the world's largest cities. There are major economies of scale in public transportation, so it is possible to live easily in a large city (like New York, London, Paris, Madrid, Tokyo, Seoul, Hong Kong, Sydney, Rio de Janeiro) without a car, with minor adjustments in lifestyle. But away from a large city, managing without a car requires drastic restrictions in lifestyles, e.g. fulfilling all goals within walking distance or organizing longer trips to fit sporadic public transit schedules. American planners often refer reverentially to Europe with its compact cities and its pro-transit policies. Yet in the small towns of many European countries (such as France, Spain and Italy), buses are very rare, usually empty, and schedules are infrequent (typically 5 buses per day, and none in the evening). The obvious conclusion is that a life based on public transit is barely viable outside the largest cities, unless one's daily life pattern can be limited to within the boundaries of a walkable small town or village. Also, public transit is not free from negative environmental impacts. Furthermore, despite the high gasoline prices (\$55 per fill-up on a compact car), very severe traffic congestion, and high parking fees (\$2.60 per hour, even in some small towns), Europeans continue to drive: The obvious reason is that mobility is a prized asset.

Nevertheless, empirical evidence and the results of a large number of studies suggest that there is strong positive correlation between population density and transit use. The higher the density, the higher the transit use. However, variables other than density – culture, household income, the design and location of transit lines, the management efficiency of transport companies, government transport policies, including subsidies – certainly also influence transit use. The correlation does not imply causality. The relationship between density and transit use in various cities of the world has been documented by Newman and Kenworthy (1989) and Kenworthy and Laube (1999).

Kenworthy established that there is a strong positive correlation between density and transit use among world cities and a strong negative correlation between auto travel per capita and density. But the correlation does not imply that in a given city an increase in density would necessarily result in an increase in transit use or that an increase in transit supply would increase density and transit use. A significant increase in average density in built-up areas is a phenomenon which has yet to be observed in large cities, looking back over the past 50 years.

Pickrell (1999) reviewed five studies based on US cities and controlling for variables such as income, household size and transit services and found that, while density affects travel behaviour, the changes are extremely small for densities below 20 people per hectare and that behavioural changes resulting in an increase of transit use become significant only in urban areas with densities at or above 40 people per hectare. One of the studies showed that if residential densities in US cities were increased by 50 per cent from

their 1990 means of 14 p/ha to a hypothetical 21 p/ha, it would reduce car travel by less than 3 per cent.

The correlation between population density and transit use is often difficult to measure because the lack of comparable data across metropolitan areas for density and for transit use and because factors others than density that might influence transit use might be difficult to measure. We compare density in the built-up areas with two types of variable: transit trips per capita and passengers per mile of metro line. These variables are somewhat more abstract than the percentage of transit trips over all trips, but they have the merit of being more accurate.

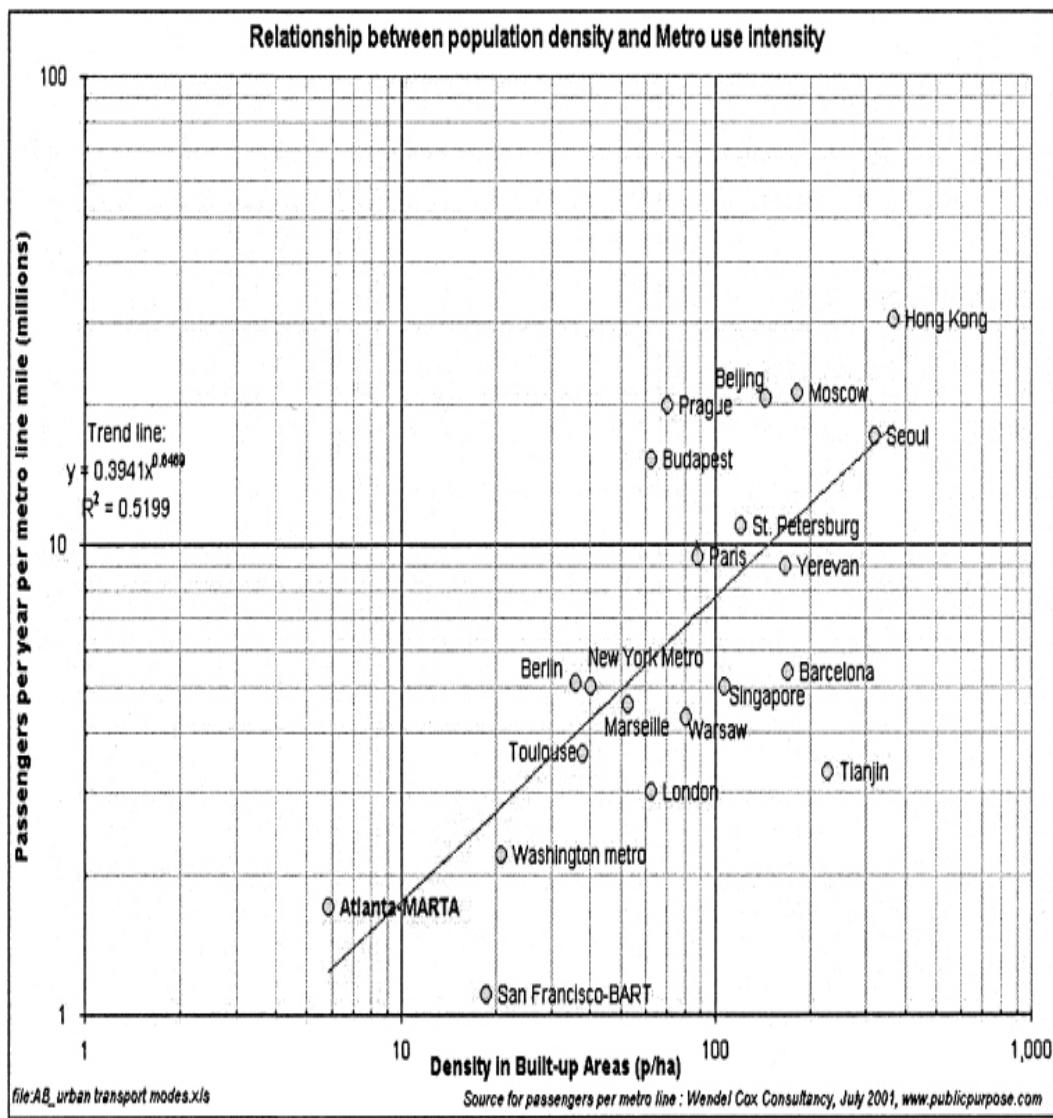


Figure 17.1 Relationship between population density and metro use intensity

Figure 17.1 shows the correlation between average density in the built-up area and passengers per mile of metro line. This variable reflects both transit supply and demand. A mile of metro line represents a fixed capital cost. The variable passengers per metro line

mile could be considered a proxy for efficiency in the use of fixed capital. [Figure 17.1](#) shows that low density cities have fewer metro passengers mile per year than high density cities. High densities do not necessarily guarantee high use – as shown by the case of Tianjin – but low density cities (below 30 p/ha) have uniformly low use.

If we compare population density in the built-up area and transit trips per capita per year globally, we find that low density cities (below 30 people per hectare) have a very low demand for transit (below 70 trips per year or about 7 per cent of all trips). Atlanta with about 40 trips per year per capita shows a relatively high demand given its very low density. This would suggest that transit trips in Atlanta are unlikely to increase much in the future as the transit system seems to have already attracted the maximum number of transit passenger compatible with its current densities.

The under-utilization of the existing transit network in low density cities suggests that low density might be associated with low demand. In other words, there may be a density below which transit becomes impractical for most travellers compared to alternative means of transportation.

Cities with low average densities (below 30 people per hectare [p/ha]) have low transit use, i.e. in these cities transit trip represents less than 10 per cent of all trips. By contrast, cities with densities above 30 people per hectare tend to have higher transit use. For example, a very high density city like Hong Kong (370 p/ha) has a very high transit use: 85 per cent of all trips are made by transit. It is no accident that one of the densest cities in the world is the only one to have been able to develop and operate its metro without subsidies.

While empirical evidence shows a strong correlation between density and transit use, it is important to know whether causality exists and why there might be a density threshold below which transit is ineffective. If a city's density is below this threshold, it could not hope to increase the share of transit trips significantly without first increasing its density.

Two principles govern this discussion. First, there is a minimum density threshold below which transit is neither practical for users nor efficient for suppliers. Second, even small densities increases at the city level are very difficult to achieve via non-coercive policies alone in a market economy. In practical terms, this means that cities with densities below the threshold are unlikely to be ever able to have a significant share of all trips using transit. However, even cities with densities above the threshold may not generate a significantly higher number of transit trips. Other variables such as the quality of transit services and cultural behaviour may be more important than density.

This issue is important because many urban planners are convinced that the low transit use typical of most North American cities is because of an inadequate supply of transit services rather than spatial incompatibility. If there is a minimum density threshold below which transit is not viable, then planned capital investments in both light and heavy rail will be squandered in cities that are below this threshold.

While there is no clear causal correlation between population densities and transit share, there are well documented empirical thresholds of densities below which transit is unpractical for users and financially unsustainable for operators. In other words, the lower

the density the more difficult it is for transit to operate. However, high density does not in itself guarantee a high transit share. Atlanta's average built-up density of six people per hectare is well below the various density thresholds suggested by most transit operators and researchers. The literature review conducted by Holtzclaw (1990) on transit and density suggests that there exists a density threshold of about 30 people per hectare (p/ha) for intermediary bus service, 35 p/ha for light rail and 50 p/ha for metro.

Population density is not the only factor affecting transit operation; the spatial concentration of jobs and people is certainly as important in determining the viability of transit. The city centre of traditional European and Asian cities is usually the place where the major number of jobs, retail space and cultural amenities are found. The steep density gradients of European and Asian cities point to the primacy of the city centre as a focal point for the majority of transit trips. It is easier for transit operators to operate transit lines with multiple origins (the suburbs) and one destination (the city centre). It is much more difficult to operate transit routes linking multiple origins to multiple destinations, as recognized by Cervero (1998), one of the strongest advocates of transit. In most 'transit cities' the trips toward the centre are mainly by transit while suburb to suburb trips are by car. While rail mass transit, commuter trains, metro, and light rail are well adapted to monocentric cities, buses are the only transit mode which makes sense in a polycentric city where jobs are dispersed throughout the metropolitan area. The more dispersed the jobs, the fewer the passengers per route, the smaller the capacity of the required buses. At very low densities and with very high job and residence dispersion, the only bus size that makes sense may be a one-person bus, in other words, the solo-driven car.

A related issue is whether transit investments might promote more compact urban development. Most, but not all, of the new rail transit developments are radial systems that either terminate or pass through the CBD. Some argue that this might help to promote downtown or inner-city development around rail stations, and thereby increasing densities. This might happen on a micro scale, e.g. moderate-size infill development. Also, although there was a modest revival in both population and employment in a few downtowns among large U.S. metropolitan areas in the 1990s (e.g. Denver, Seattle; Birch, 2002), the more successful were not rail cities. Empirical research by Ihlanfeldt and Bollinger (1997) found little evidence of nonresidential land use impacts around Atlanta around MARTA's (Metropolitan Atlanta Regional Transit Authority) rail stations. Furthermore, in a much earlier theoretical analysis, Capozza (1973, 1976) argued that a subway accelerates suburbanization by increasing accessibility to downtown (i.e. declining transportation costs pushed the equilibrium location further out). This may be less true now than then, however, because job decentralization has reduced the impact of accessibility to the CBD as an influence on land values.

Finally, a major concept linking transportation and high density is transit-oriented developments (TODs). The key idea is to promote both residential and commercial development around transit terminals (usually, but necessarily, rail) to reduce auto dependence and promote mixed land uses in a denser urban environment (Cervero, 1998). There are many successful examples in East Asia and, to a lesser extent, Western Europe, but experience in the United States has been much less favourable. A major obstacle is the

very low transit share of personal trips (about 1.6 per cent, according to the 2001 National Household Travel Survey; Pucher and Renne, 2003) and the appeal of TOD locations to prior transit riders (more than two-fifths of those choosing to live or work in TODs). But there are other difficulties, such as pre-existing land uses with both redevelopment and large-scale land assembly being hard to implement and the fiscal impacts being problematic (Boarnet and Compin, 1999). Prospects for TODs in the United States are brighter on greenfield sites with new rail stations.

The Atlanta Case

Atlanta is one of the lowest density metropolitan areas in the United States, far below the 30 p/ha threshold estimated to justify viable transit (see [Figure 17.2](#) and [17.3](#) for a comparison of Atlanta's density with those of other cities around the world). Is it possible for Atlanta to increase its density in the medium term (say 20 years) to enable an increase in its transit share?

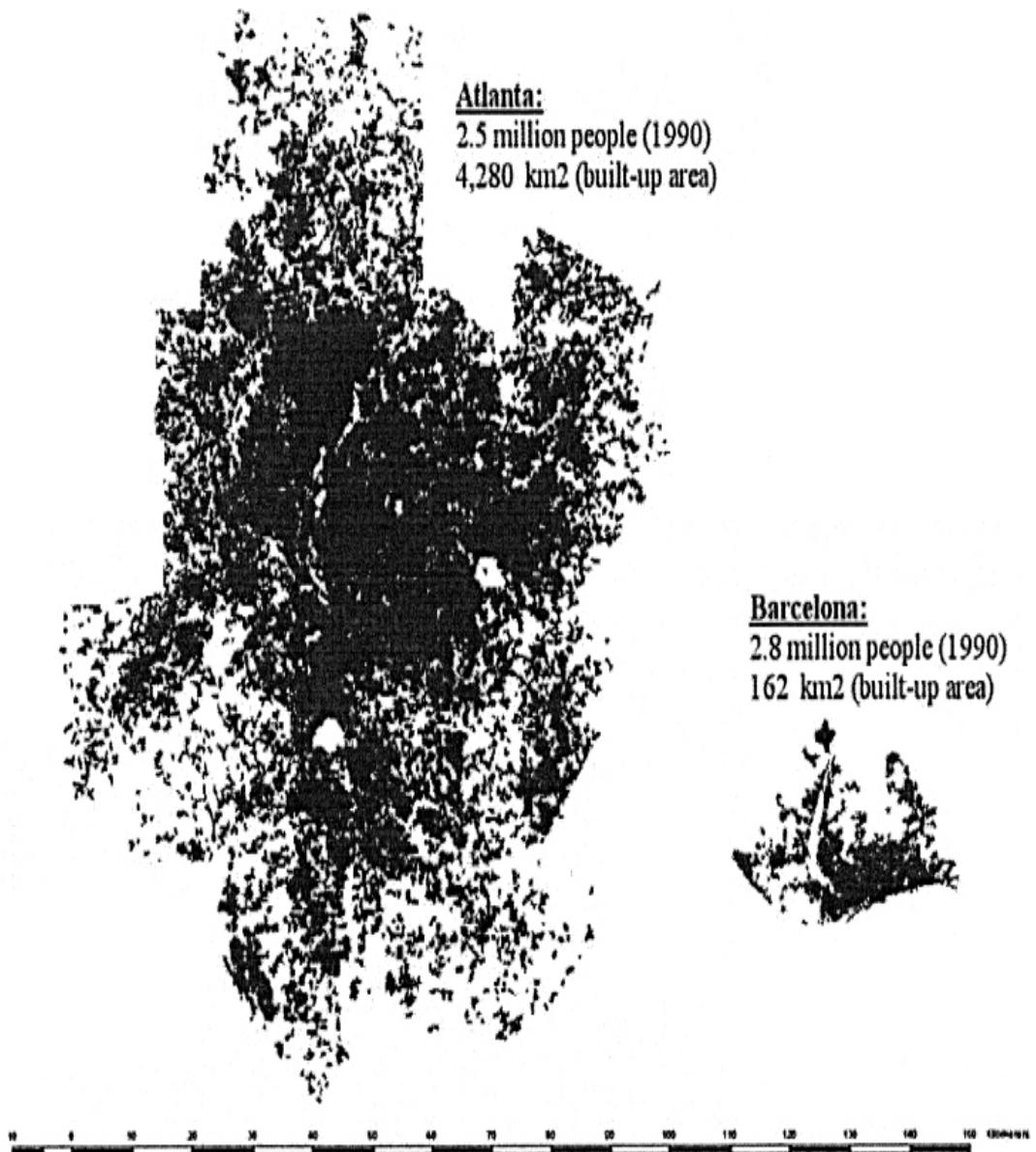


Figure 17.2 The built-up area of Atlanta and Barcelona compared

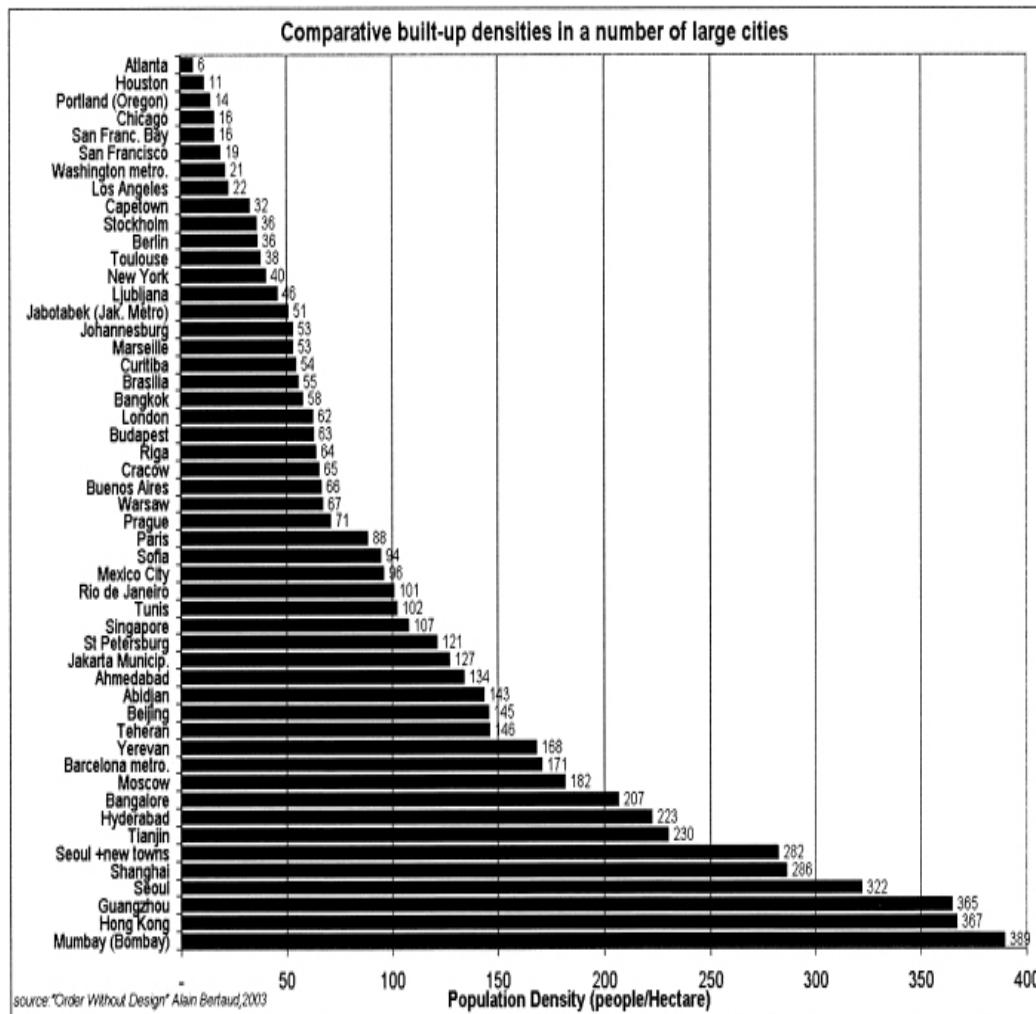


Figure 17.3 Comparative built-up densities in a number of large cities

i. Could Atlanta density ever reach 30 p/ha?

As suggested above, some planners argue that urban densities would rise if the supply of transit services were increased and if land use legislation were amended to allow higher densities. Increasing transit supply would raise density, which in turn would increase demand and viability, creating a virtuous circle. This could be possible for cities which are close to the density threshold. In the case of Atlanta, this proposition is not credible.

As we have argued, empirical evidence suggests that the density threshold to operate transit on a sizable scale is around 30 people per hectare. However, most US cities are so much below this threshold that it is impossible for them to attain this density, even in the long run.

To illustrate this point, let us look at two possible scenarios to increase density over the period 1990–2010.

ii. Scenario 1: fixing a target of 30 p/ha density to be reached in 2010

Atlanta in 1990 had an average density of 6 people per hectare in the built-up area. Assuming that the population will continue to grow at 2.7 per cent a year (the growth rate observed between 1990 and 1999), in order for the average density to reach 30 people per hectare in 2010, the built up area of 1990 (4,280km²) would have to be reduced to 1430km², or by two-thirds (Table 17.1). This could be done by either transforming the redundant built-up area into green areas or by returning it to agriculture. In the one-third of the built-up area of 1990 that would be kept, every existing plot would have to be subdivided into four plots. Under this scenario, the real estate value of two-thirds of the existing housing stock would be drastically reduced while that of the remaining one-third would dramatically increase. Both from an institutional and a market point of view, this is an absurd scenario, but the only one that would allow Atlanta to reach a density approximating those of the Los Angeles and New York metropolitan area by 2010. The prospects for 2020 are not much better.

Table 17.1 Scenario 1: Atlanta reaches a density of 30 persons/ha by 2010

	1990	2010	Difference	
Population	2,513,000	4,281,600	1,768,600	70%
Annual pop growth rate	2.7%			
Built up density (p/ha)	5.87	30.00		
Built up area (km ²)	4,280	1,430	-2,850	-67%

iii. Scenario 2: Freezing the built-up area, 1990–2010

The Atlanta built-up area was 4,280km² in 1990. If this area has been frozen, i.e. no expansion had been allowed for a period of 20 years and new development has been forced to densify the existing area, the average density after the 20 years would still be only 10 p/ha. This density is only one-third of the density value threshold necessary to raise transit use significantly. Freezing land development would also incur costs in terms of residential preferences, depriving households of the ability to acquire more land. This is obviously not a plausible scenario even for a distant future. Raising the average density of a city significantly requires much more than a few higher-density New Urbanist developments. In most world cities, the trend is in the other direction; densities are declining over time.

Table 17.2 Scenario 2: No addition to the built-up area, 1990–2010

	1990	2010	Difference	
Population	2,513,000	4,281,600	1,768,600	70%
Annual pop growth rate	2.7%			

Built up density (p/ha)	5.87	10.00		
Built up area (km ²)	4,280	4,280	0	0%

iv. The geometry of accessibility to transit stations

The geometry of accessibility to bus stops or transit stations helps to explain the existence of the density threshold.¹ In an urban area, passengers may gain access to a transit station by walking, bicycling or by riding a car. In most cities where transit represents more than 30 per cent of trips, the major mode of access is walking. Access to transit stations by bicycle is also common in some cities. Topography, climate, inadequate security and cultural traditions severely limit the use of bicycle in many locations.

In the United States (with its lower transit shares than elsewhere) park-and-ride is very common. Some transit stations have a large parking lot to allow access by car. However, access to a transit station by car, when it becomes the dominant form of access, defeats some of the goals of transit. Short-distance car trips at low speed pollute much more than longer trips at higher speed. The parking lot needs to be large and often makes pedestrian access more difficult, while entrance and egress contributes to street congestion in peak hours.

For these reasons, we confine our discussion to pedestrian access. The maximum distance most people are willing to walk to a transit station is 800 meters, or 12 minutes walking time. This distance may vary somewhat, depending on variables like climate, culture and income. The area within 800 meters walking distance may differ, depending on street layout.

The largest possible catchment area within 800 meters distance is 128 hectares, regardless of the shape of the market area (circle, diamond, hexagon, etc.). Other arrangements, with stations closer together but transit lines further apart, reduce the size of the catchment area. The constraint imposed by geometry on transit accessibility cannot be overcome. To be accessible by walking, the market area of transit stations cannot be more than 128 hectares and stations cannot be farther apart than 1600 meters. The distance between parallel transit lines cannot be more than 800 meters if stations are 1600 meters distant. To be accessible to everyone there should be about 2.5 bus stops or stations per square kilometre and about 1.6 kilometres of transit line per square kilometre. The geometric constraints are the same regardless of density. The consequences of different densities on the viability of transit capital and operation costs is obvious. If transit has to be developed within walking distance of all households, Atlanta would have to build 3,400km of lines (see below).

Other US Examples

Portland, Oregon

Portland, Oregon, is a very special case in the United States, renowned for its growth management regime (especially its urban growth boundary), its regional planning agency (Portland Metro), and its pro-transit policies. We will illustrate the Portland situation via a comparison with Los Angeles.

The comparison that many find hard to believe is that Portland, despite more than two decades of planning to increase densities, is very low density compared to Los Angeles. The 2000 urbanized area information has not yet been released, but the 1990 data show 3,021 persons per square mile in Portland and 5,801 persons per square mile in Los Angeles. Much is made of the high densities in the NE 23rd A venue Census tract in Portland, yet its 2000 density (22,683 persons per square mile) is only 24 per cent of Los Angeles' densest Census tract (Vermont/Normandie/3rd/5th at 94,450 persons per square mile). The NE 23rd A venue area is closer to Interstate 205 than the light rail system (MAX), and its restaurants and shops depend more on cars than on transit riders and pedestrians. Finally, if you compare either the 1 per cent or the 10 per cent densest areas in Los Angeles with those in Portland, Los Angeles is three times denser.

We would expect that Portland's growth management regime would have reduced the rate of land consumption in the Portland metropolitan region. Proportionately, more urban land was absorbed in Portland than in Los Angeles percentage-wise in each five-year period between 1982 and 1997 (the years are dictated by the dates of the National Resources Inventory database), but the gap widened in the later years. In 1982–1987 urban developed land increased by 10.1 per cent in Portland, 7.3 per cent in Los Angeles; in 1987–1992 the numbers were 12.8 per cent and 11.9 per cent; finally, in 1992–1997 Portland's urban land consumption increased by 19.4 per cent compared with 6.5 per cent in Los Angeles.² Over the period as a whole (1982–1997), Portland's density fell by 11.3 per cent, while that of Los Angeles increased by 2.8 per cent (Fulton, Pendall *et al.*, 2001). In parentheses, comparing the Census years of 1980 and 2000, among the large metropolitan areas, only Los Angeles and Phoenix experienced increasing densities; everywhere else densities declined. The national picture augurs poorly for transit expansion in the United States.

When we compare the two metropolitan areas' highway systems, Portland has 2.8 times more road length per capita than Los Angeles and 50 per cent more freeway capacity per capita. In the 1990s, VMT per capita increased much faster in Portland than in Los Angeles and road congestion increased two-and-a-half times faster (although the level of congestion remains higher in Los Angeles). Also, commuting times are about 25 per cent shorter in Portland, primarily a consequence of its smaller geographical size, although they are increasing much faster.

Despite the pro-transit policies of Portland Metro over a long period (the Metropolitan Transportation Authority [MTA] in Los Angeles has also been very pro-rail in recent years, but hobbled by insufficient resources), it does not have much of a transit advantage. Both Portland and Los Angeles have transit boardings per capita above the national average, ranked 11th and 12th respectively. Over the past two decades, there has been a modest increase in ridership in Portland, reflecting its aggressive light rail expansion. In

Los Angeles, on the other hand, transit ridership declined, in part because of fare increases but primarily because of bus service cutbacks as resources were diverted to the much more expensive rail projects. Nevertheless, the transit share remains less than 2 per cent of total trips in both regions.

Another interesting point is a comparison between Atlanta, a prime focus of this chapter and Portland (Antonelli, 2000, p. 150). Although Atlanta is even more sprawling than Portland with 65 per cent of the latter's density, its core public transit ridership per capita is about 90 per cent higher (relatively high given its low density, as suggested above), and its highway construction has been 45 per cent lower since 1982. The increase in road congestion has been comparable in the two metropolitan regions. This is less an endorsement of Atlanta than an indictment of Portland's false claims.

The light-rail evidence for both Portland and Los Angeles is very similar. The MAX route expands from downtown to Gresham in the East and, more recently, to Hillsborough in the West; a 5-mile spur to the airport has recently opened; a cross-river extension to Vancouver in Clark County, Washington, is currently stalled. In Los Angeles, the Blue Line from Long Beach to Los Angeles is operative, while its extension to Pasadena (the Gold Line) is about to open. The Green Line runs from Norwalk in the East to Redondo Beach in the west, stopping two miles short of the airport! There is also a heavy rail line (a subway, the Metro) from downtown to North Hollywood (a dog-leg line turning west to Western Avenue before it turns north). There are also several radial peak-hour trains to suburban nodes (Metrolink) that run on pre-existing rights of way. The important point is that both these 'systems' are much less than comprehensive rail systems and do not provide region-wide coverage like those of Tokyo, Seoul, Paris, London and some other major cities. This is an inevitable product of low densities; at current construction costs, it is too expensive to build a rail system that could build a significant rail transit share. In other words, Atlanta's problem is not unique.

In both Portland and Los Angeles, rail captured most of their riders from the buses, not surprisingly given that parallel express bus services were closed down. Also, new trips were generated, but the modal shift from cars was minimal in both cases. In both metropolitan regions, the design made it difficult to add to capacity via new cars, a problem already visible in Los Angeles' Blue Line that has more or less reached its capacity ridership. Even close to capacity, the capital and operating costs per trip on the Blue Line are huge relative to the fare.³ The capacities of both systems are minimal compared with adding another freeway lane. In Portland, in particular, highway congestion has deteriorated as MAX service has increased.

A particularly aspect of the transit story in Portland is its contribution to transit-oriented development, especially the jewel in the crown, Orenco Station. Orenco Station (the name dates from early in the century when the streetcar system was running) is located 15 miles west of downtown on the Western corridor of the MAX light rail line to Hillsboro (Bae, 2002). It was built with light rail access as its primary amenity. Yet only 20 per cent of its residents regularly use the MAX light-rail service because the trip to downtown Portland it takes twice as long by MAX as by the private automobile.

It is too soon to assess whether Orenco Station will be a success. It offers several housing types at relatively high densities by US standard (6.6 dwelling units per acre for single-family homes and 22.6 multiple dwelling units per acre) in an up-scale neighbourhood. However, most of the housing is too far north of the rail station, in some cases a mile away, nearer to the new commercial retail strip than to the station itself. Furthermore, the freeway is only two miles away. A survey of residents found that only one in six used transit more than twice a week. Some commuters walk to the nearby high-tech worksites of Intel, NEC, Fujitsu and Toshiba. There is little parking near the station (except for a 150-car lot for transit carpoolers), few homes are within convenient walking distance and the feeder bus system provides infrequent service from the more distant access points. Yet rail ridership is increasing faster than population growth and housing close to the stations commands a price premium, so the jury is still out.

Minneapolis, Minnesota

A light rail project is being built parallel to Hiawatha Avenue in Minneapolis. It is a North-South link of 11.5 miles with 14 stations (most of them in downtown). It will run from downtown to the airport⁴ and the Mall of America (the largest shopping mall in the United States). There are no other rail projects on the horizon, so a rail system is out of the question. This projected is located in one of the lowest-density metropolitan areas in the United States, a less than ideal location for rail. Moreover, the direction of development in Minneapolis is East-West whereas the rail line is on a North-South axis. This is probably one of the least cost-effective rail projects among a sea of cost-ineffective projects. Why did it ever get underway? Perhaps, the bandwagon effect. Every respectable large metropolitan area needs the prestige of a rail project. Also, the flow of Federal funds is difficult to turn down. At a critical juncture, Jessie Ventura, the maverick former Governor and a one-time professional wrestler, threw in his support.

The line will be a boon for out-of-town business persons, travelling from the airport to downtown, and tourists visiting the Mall of America, undoubtedly Minnesota's most important tourist attraction. Whether it will have any appeal to local residents is debatable, unless there is a very efficient feeder bus system. Park and ride facilities are planned at only two stations, Fort Schnelling and the Mall of America. It is difficult to conceive of much appeal to the Mall shoppers; given the habits of American shoppers, carrying large shopping bags and tolerating a modal transfer seems unattractive compared to driving to the Mall with its ample park. Combine the average service speed of 22 mph with the fact that most Twin City residents would have to take a feeder bus to ride the train (with all the time losses that modal shifts involve), and most people will choose to drive. Ted Mondale, the head of the Board, has touted transit-oriented development, but it is difficult to identify the stations where land uses could dramatically change given that all but two of the stations are in downtown or at the airport and the Mall.

International Comparisons

Background

It is well known that cities outside the United States, especially in Asia, but even in Europe are much more compact (Newman and Kenworthy, 1999). They also have much higher public transit and non-motorized mode shares, so the inference is that automobile dependence and density are strongly and negatively correlated. There is nothing wrong with this empirical observation, but its interpretation has to be handled with some caution. First, there is a difference between levels and trends. The negative relationship between automobile use and compactness is much more convincing in cross-sectional terms. But the rates of growth in automobile ownership in Europe and Asia are much faster than in the United States, typically twice as fast but often more than that (e.g. in Japan). The differential is much higher than can be explained by the acceleration of decentralization trends in these countries, so clearly there are other forces at work besides urban form. For example, per capita income growth rates have also been higher in many countries than in the United States, and there is a perennial debate about the relative importance of income and urban form as determinants of automobile use (Ingram and Liu, 1999).

Second, the relative price of transportation modes has to be taken into account, and gasoline prices in the United States are typically about one-third of those in Newman and Kenworthy's comparison cities.

Third, choosing rail as a mode is a function of the geographical coverage of the regional transit system, and many cities outside the United States have had large rail systems in place for many years. Most United States cities either have truncated rail systems (e.g. one or two corridors) or no rail at all. The consequences are much more a reflection of public investment policy than urban form.

Fourth, Newman and Kenworthy (1999) also make a major point about shorter commuting distances in cities outside the United States (approximately 8 kilometres in Asia, 10 kilometres in Europe and 13 kilometres in Australia compared to 15 kilometres in the United States). However, distance travelled is far less important than travel time. Travel times are comparable in both compact and dispersed cities, as a result of average travel speeds being much faster in dispersed cities because of less congestion and more reliance on the faster modes. Thus, the length-of-commute advantages of the more compact cities outside the United States are eroded by their slower travel speeds.

Fifth, the contrast between sprawling America and compact Europe (and, to a lesser extent, compact Asia) is narrowing rather than widening, despite major differences in public policies (Nivola, 1999). Take France, for example. Lifestyle preferences favour a quasi-rural life close to a big city (Prud'homme and Nicot, 2003), not only Paris but also other large cities (e.g. Lyon, Marseilles, Bordeaux). Because of the limitations of public transit services outside the large urban cores (except for inter-city rail service), this lifestyle can be accommodated only via the private automobile.

Atlanta and Barcelona Compared

To understand better why density is important in transit, let us use compare Atlanta with Barcelona. Barcelona is a reasonably representative example of many large European cities, where transit represents a significant share of daily trips. Atlanta and Barcelona have similar populations (close to three million), both cities have emerged as regional economic dynamos in their regions, and both cities were recent Olympic Games hosts. However, the spatial structures of the two cities are very different: the average built-up density of Barcelona metropolitan area (171 p/ha) is 28 times larger than Atlanta's (6 p/ha); see [Figure 17.2](#) for a comparison of the relative sizes of Atlanta and Barcelona. This implies that in Atlanta the area covered by the transport network has to be 28 larger than in Barcelona to move the same number of people. The metro network in Barcelona is 99 kilometres long with 60 per cent of the population living less than 600 meters from a metro station. Atlanta's metro network is 74 kilometres long (about one-quarter shorter than in Barcelona), but only 4 per cent of the population live within 800 meters from a metro station. We should not be surprised if in Atlanta only 4.5 per cent of trips are made by transit vs. 30 per cent in metropolitan Barcelona where the high density also facilitates an impressive 8 per cent of all trips to be pedestrian.

Hypothetically, suppose that the city of Atlanta wanted to provide its population with the same metro accessibility that exists in Barcelona i.e. 60 per cent of the population within 600 meters from a metro station. Atlanta would have to build an additional 3,400 kilometres of metro tracks and about 2,800 new metro stations. This huge new capital investment would allow Atlanta's MARTA to potentially transport the same number of people that Barcelona does with only 99 kilometres of tracks and 136 stations. The effect of density on the viability of transit is far from trivial. This example illustrates the severe constraints that low density imposes on transit viability. This comparison has been about metro track length and rail stations but a comparison between bus lines length and the number of bus stops in Barcelona and Atlanta would yield similar results. With its low densities, it is not surprising that Atlanta is encountering difficulties in developing viable transit, i.e. a transit system that is convenient for the consumer and financially feasible for the operator. Empirical evidence confirms that there is a density threshold below which it becomes impossible to provide transit service.

The United States and the United Kingdom

Research by Giuliano and Narayan (2003) shows that distance travelled per day for both work trips and nonwork trips decline with increasing density in both the United States and the United Kingdom (by approximately one-third comparing the lowest with the highest densities, by somewhat more in the case of US nonwork trips. Regardless of densities, distance travelled per day is longer for both types of trips in the United States than in the United Kingdom (by 15-20 per cent in the United States for worktrips and by 33-50 per cent for nonwork trips). There are many explanations for the US-UK differentials such as income, car ownership rates (especially age-specific rates), the price of motoring, the extent of mixed land uses and, of course, the extent of public transit. The modal shares of all trips (according to the large sample survey data of Giuliano and Narayan (2002) were

6.6 per cent for buses, 1.6 per cent for rail, and 32.3 per cent for non-motorized modes (bicycling and walking) in the United Kingdom, approximately five, three and five times the shares in the United States. When disaggregated by trip type, transit and non-motorized modes accounted for 45 per cent of non-work trips in the United Kingdom, but only 8.3 per cent of trips in the United States; private car use drops off only very modestly in the United States comparing work and nonwork trips from 93.2 per cent to 88.7 per cent (Giuliano and Narayan, 2003).

A stimulus for the survey research by Giuliano and Narayan was that almost all prior comparisons were based on national data. This highlights the importance of geographical scale. Although their research suggested that metropolitan size did not influence travel behaviour, there can be little doubt that intrametropolitan differences are sizeable, with more transit use in core areas, while in lower-density peripheral areas automobiles will rule. Metropolitan average densities and travel mode shares can be very misleading. As an example, in Central and Inner London, 60.3 per cent of commuting trips are by public transit, while in Outer London and the rest of the Greater London region 73.8 per cent of trips are by private vehicles (Giuliano, 1998). Residential densities in Central London (despite the dominance of commercial development) are 8-plus times higher than those in Outer London (Richardson, Bae and Baxamusa, 2000, Table 2). Although this is possibly an extreme example, it illustrates the dangers of metropolitan-wide generalization.

In making comparisons between the United States and the United Kingdom (or other Western European countries), we must be careful about drawing false interpretations from the shorter trip distances in Europe. The shorter distances are almost fully offset by slower travel speeds. For example, comparing the denser London with the more dispersed metropolitan areas of the United States, round-trip average commuting times are 54.4 and 58.4 minutes respectively while average travel speeds are 15.4 mph and 29.5 mph respectively (Giuliano and Narayan, 2002). The two major factors in the slower travel speeds in the United Kingdom are road congestion in high-density areas and longer door-to-door travel times with public transit (more because of access walking time than on board line-haul times).

The Netherlands

A classic, if descriptive, study of the Netherlands by Clark and Kupers-Linde (1994) compared commuting patterns in Los Angeles and the much higher-density Randstad region. Despite the differences in density, the greater reliance on transit and especially non-motorized modes in the Netherlands, such as bicycling, and vastly different policy environments with respect to both transit and automobile use, the trends were remarkably similar: more job dispersal and a modest increase in commuting length. Increasing polycentricity in Europe will continue to undermine transit use and expand reliance on the automobile even in relatively dense areas and in pro-transit policy environments.

Seattle and Oslo

The cities are similar in size, although the Seattle metropolitan region is more than three times the size of that of Oslo, and car ownership rates are not very different (83 per cent in Oslo vs. 96 per cent in Seattle). Despite the fact that Seattle has four times the transit route length, hoardings are less than two-thirds of those in Oslo. Transit use in Oslo is 15 per cent of trips, only 4 per cent in Seattle; walking in Oslo is 22 per cent of trips, only 5 per cent in Seattle; and bicycling is 6 per cent of trips in Oslo, and only 0.5 per cent in Seattle. This is simply one of endless pairwise examples. Comparing any US city (with the exceptions of New York and Chicago) with any European city would show similar results.

Conclusions

The empirical evidence of an association between low-density settlement patterns and a high reliance on automobiles on the one hand and between high-density environments and more transit use on the other is firmly established. This chapter is more interested in the dynamics, especially in a policy context, than in the static relationship. Similarities and contrasts between the United States and Western Europe provide a backdrop to this discussion. Many in the planning profession in the United States believe that densification strategies can induce more transit use or, alternatively, investing in more transit will result in higher densities. They look to Europe as a model for this strategy, even though the policy environments are very different (Nivola, 1999). Unfortunately, the facts are against them. Certainly, transit shares are higher in Europe, especially in or close to core cities where densities are higher. But the trends indicate convergence between the United States and Western Europe, with the automobile share rising in the latter despite higher densities and very strong pro-transit policies. Also, all the efforts to promote more transit in the United States have, according to the 2001 NHTS survey, resulted in a declining transit share. The reasons are clear. While you can introduce higher densities in micro-environments, especially if you implement draconian changes in zoning ordinances, making region-wide density changes is like trying to turn an aircraft carrier around. Alternatively, as the Atlanta-Barcelona example illustrates, the investments in public transit required to generate European levels of transit shares are impossibly infeasible. Of course, you make changes at the margin. But the overall assessment is unequivocal. Whatever problems, real or imagined, might be associated with sprawl in the United States, the transit-high density remedy is bound to fail. An intelligent reading of the European experience makes this obvious, despite contrary conclusions drawn by the less well informed. Almost all US cities are caught in a low-density trap from which there is no escape via pipedreams, fantasies or even forceful policies.

¹ To simplify, we will call transit station a bus stop as well a light rail, suburban heavy rail or metro station.

² Advance data from the National Resources Inventory kindly provided by Henry Bogusch.

³ For a relatively early but detailed comparison see Richmond (1998). An interesting finding of his analysis is that the cost per ride on MAX is similar to that on buses, whereas in Los Angeles the cost per ride on both the Blue and the Red Lines is many times higher than on the buses.

⁴ For some obscure reason (perhaps the power of the taxi lobby), the Green Line in Los Angeles stops two miles short of the airport.

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Chapter 18

Traffic and Sprawl: Evidence from US Commuting, 1985 to 1997

Randall Crane and Daniel G. Chatman

Introduction

Perhaps the clearest aspect of the structural evolution of metropolitan areas is the decentralization of both jobs and housing. During some periods, US central cities have grown at a lower rate than their suburbs; in others, the decline has been in absolute numbers. The overall trend is fairly strong, particularly over the past century:

In 1940, only one of the ten largest cities in the US had a population density below 10,000 people per square mile (Los Angeles). In 1990, population density levels are below 7,500 people per square mile in seven of the ten largest cities ... In 1940, the overwhelming number of urban jobs appear to have been close to the city centre. In 1996, in the average metropolitan area only 16 per cent of jobs are within 3 miles of the central business district. The dense, walking city of the 19th century has been replaced by the medium density, driving city of today. (Glaeser and Kahn, 2001, [p. 2](#))

Many questions remain regarding the consequences of this pattern of decentralization and deconcentration or, to use a broader term, sprawl. Much of the debate concerns environmental resource issues, such as the excess conversion of open land to urban uses and pollution problems associated with overdependence on cars. The potential social impacts are also widely discussed. For example, one of Putnam's (2000) 'sprawl' explanations for a decline in US social capital is that the suburban commute leaves less time and energy for social interaction.

Indeed, most data indicate that people are driving farther to work these days – but is sprawl to blame? It is surprising how little is known with any certainty about what sprawl means for driving behaviour beyond summary statistics in travel surveys (e.g., Pisarski, 1996). It is not clear whether

homes and jobs are growing farther apart or closer, or which industries and occupations are dispersing most or least. On the other hand, this void is less surprising given the complex nature of these relationships.

This paper focuses on a single but important question: *Does the average commute increase or decrease when employment decentralizes?* In doing so, we find that both theoretical and empirical literatures reveal significant gaps. In general, theory provides several hypotheses but few if any hard conclusions, while empirical studies rarely formally test those hypotheses directly.

This chapter addresses these gaps in several ways. It builds on established theories of urban structure and transportation behaviour to develop the hypotheses of interest. These are tested on a rich data set for US metropolitan areas over the period 1985 to 1997. The model specification conforms to urban form theory, the model estimation uses panel techniques, and the potential endogeneity of wages and land costs is taken into account.

In brief, we find that the more suburbanized is employment – that is, the more sprawl – the shorter the average commute. There are strong differences by industry, however. The suburbanization of construction, wholesale, and service employment is associated with shorter commutes, while manufacturing and finance deconcentration (weakly) explain longer commutes. These results may reflect a combination of industry agglomeration effects, differential job location stability by industry, and historical transitions. While travel behaviour is thus complex and nuanced, there is no evidence in these data that overall job decentralization lengthens the average journey to work. It appears to do the opposite.

Previous Research

Much of the theoretical literature assessing the effects of population and employment decentralization on commute length or travel behaviour is based on the monocentric model (Alonso 1964; Mills 1972). In that model, the market for urban land is defined by the inelastic demand for a commute to the city centre by one-worker households. Individual households choosing where to live are expected to trade off the value of access to their current jobs against housing expenditures, resulting in declining equilibrium housing rents and residential development densities as commute length increases (that is,

with increasing distance from the city centre). Transportation costs thus determine rents, and the extent of decentralization is explained by the interaction of transportation costs with the preferences of households, given their financial and time budget constraints. In the end, suburban residents drive more, but they are compensated by lower rents per unit of land.

Simple polycentric elaborations on the monocentric model permit workers to choose from among several job locations within a given metropolitan area, allowing greater average proximity between home and work (White 1976, 1988; Wieland 1987; Yinger 1992; Wheaton 2002). In a world where employment exogenously disperses, this basic polycentric version of the monocentric model suggests that commutes should get shorter, *ceteris paribus*.¹

Gordon, Kumar and Richardson (1989b) provide one of the earlier examples of empirical tests of the hypothesis that employment decentralization might reduce commute length – in this case, commute duration. The authors used Census and satellite land use data for 82 US metropolitan areas to investigate the relationship between mean commute travel time by auto or transit and the following measures of urban form: total urban land area, proportion of workers in industrial and commercial employment respectively, and net land use density by type, controlling for area-wide average income.

In OLS regressions with commute duration as the independent variable, the authors found that spatially larger cities had longer commutes, while shorter commutes were associated with a higher proportion of industrial employment. Higher residential density was associated with commutes of longer duration. The proportion of employment in the central city was highly associated with commutes of longer duration. The authors concluded that both residential and employment dispersion lead to shorter commutes.

In a descriptive study appearing the same year, the authors again investigated some of the same relationships between congestion and urban form, this time focusing on city size (Gordon, Kumar, and Richardson 1989a). They used the Nationwide Personal Transportation Surveys of 1977 and 1983–1984, along with the 1970 and 1980 Census journey-to-work data, to argue that larger cities do not necessarily have longer commutes because much of their growth has occurred in suburban areas that allow economies of commuting. They make two main points in support of this argument. First, in

1977, durations of commutes originating outside central cities were roughly equivalent regardless of city size, but those originating within central cities were uniformly lengthier with increasing city size, suggesting that only suburban dwellers avoided the effects of increasing city size. (The 1983 results were not as clearly defined but tended to show the same general pattern.) Second, commute speeds were higher in suburban areas.

Subsequent analytical work has continued to focus on disaggregate data.² Levine's 1990 dissertation and subsequent research (Levine 1990, 1998) explain residential location choice, in search of shorter commutes to suburban employment, as a function of housing supply as well as demographic factors. Levine specifically finds that the commutes of low-income households lengthen as employment suburbanizes due to shortages of affordable household near these jobs. Another example is Dubin's use of 1977 Baltimore data to estimate a reduced-form supply and demand model of the *change* in commute time (Dubin 1991). Dubin found that men, non-Blacks, higher income households, and those owning their home enjoyed shorter commutes. Notably, even while commute distances increased for most, travel times fell, especially in the less congested suburbs.

To summarize, commute length is a nuanced phenomenon that is challenging to investigate empirically. Investigating the connection between commute length and employment or residential decentralization is no less challenging. On the one hand, employers may benefit from shorter commutes by being able to reduce wages. However, this may be mitigated by the need for workers to take into account future job locations. And other important influences on residential location, such as local municipal and district services, and accessibility to other nonwork activities, may also come into play as decentralization occurs. The equilibrium outcome is an empirical matter. Furthermore, any empirical strategy must account for the endogeneity of land rents, wages, employment status, and car access. Finally, we need good measures of other demand/supply factors, such as socio-demographic characteristics at the individual level.

Data

We rely on two main data sources: individual-level travel data and metropolitan-level employment data.

Data on Worker Commute Distance and Demographics

For data on workers and their commute lengths, we use the American Housing Survey (AHS), a panel of housing units that are surveyed every two years by the Census Bureau for the US Department of Housing and Urban Development. We use the seven waves for the years 1985, 1987, 1989, 1991, 1993, 1995 and 1997. Between 11,000 and 15,000 respondents are included per year, for a total of more than 64,000 housing unit observations over five years. Rich detail is provided on the residents of the housing units, including the reported distance to work (commute duration is not available), income, education, marital status, ethnicity, age, gender, and other demographic and economic characteristics. Even greater detail on the condition and characteristics of the housing unit is recorded, though this was not utilized at this stage of the research.

Eliminating group quarters, mobile homes, units from non-metropolitan areas (as defined by the Census Bureau), households who reported spending less than 1 per cent or more than 150 per cent of their income on housing, observations where the number of occupants was not reported, vacant structures, nonurban structures, and observations for which the SMSA was not provided leaves 185,085 total observations in the seven waves, representing 42,380 housing units, about two-thirds of the full sample.

Metropolitan Employment and Population Data

The Bureau of Economic Analysis Regional Economic Information System (REIS) provides county-level estimates of employment by industrial sector (one-digit Standard Industrial Classification code level) for the years 1969 to 2000. The REIS includes both regular wage and salary employment and other kinds of employment, such as proprietors' employment and self employment.

The source for wage and salary employment is the federal Covered Employment and Wages Program, a joint program with the Bureau of Labor Statistics (BLS) and the State Employment Security Agencies, which administer unemployment insurance programs. The states get the information from reports issued monthly by employers subject to unemployment insurance regulations. The employment figures include both full-time and part-time jobs.

The BEA augments the BLS wage and salary employment data with estimates for self-employment and proprietors' employment that are based partly on IRS income tax reporting. Self-employment and proprietors' employment can be a substantial fraction of total employment.

In addition to employment by county by one-digit SIC code, the REIS tables include mid-year Census estimates of population by county.

Metropolitan Area (MA) Definitions

This study uses the official US metropolitan area definitions promulgated by the Office of Management and Budget in 1999 and revised January 28, 2002, which are the same definitions used for Census 2000. The definitions are provided by the Bureau of the Census, and include a classification of counties within metropolitan areas as 'central' or 'outlying.'

Metropolitan areas must include a city of at least 50,000 inhabitants; alternately, they can include a Census-defined 'urbanized area' of 50,000 or more if the county containing the urbanized area has at least 100,000 inhabitants.

The classification of intra-metropolitan-area counties is of particular interest to this study. In brief, central counties are those with at least 50 per cent of the population of a designated central city or 50 per cent of whose population lives in a Census-defined urbanized area.³ Counties bordering the central county or counties are designated as outlying counties, and included within the metropolitan area, based on commuting patterns and density. For example, if at least half of the residents of the nearby county commute to the central counties to work, and certain threshold density and population requirements are met, the county is designated as outlying and included within the metropolitan area. Peripheral counties whose commuting is at a lower level still qualify as outlying if their density is at a sufficiently high level, if a substantial enough fraction of their population is within the Census-designated urbanized area, or if recent population growth in the area has been high between the previous two decennial censuses.

Metropolitan Employment and Population Variables

Metropolitan employment and population were calculated by summing the BEA county data using the definitions of metropolitan areas described above. The metropolitan employment and population decentralization variables were constructed by dividing the employment in designated central counties by that in all of the counties within the metropolitan area, and representing this number as a percentage in whole numbers. These variables were in turn assigned to respondents based on the match between the AHS designation of metropolitan areas, based on the 1983 OMB/Census definition, and the current (1999) OMB/Census designation. In cases of Consolidated Metropolitan Statistical Areas, which are metropolitan areas made up of more than one Primary Metropolitan Statistical Area (PMSA), the total employment in the CMSA was used and respondents from more than one PMSA were assigned the same values for the decentralization variable.

Unlike typical measures of decentralization based on distance from a city centre, this measure allows non-contiguous or spatially extensive urbanization of sufficient density to be designated as core urbanization. Only employment in counties without large enough agglomerations or sufficiently high density is designated as decentralized or dispersed. The measure is conservative, although somewhat crude due to its reliance on county geography. It can be thought of as a measure of the share of employment in the most dispersed form—outside of urbanized counties altogether, though adjacent to them.

Matching Metropolitan Employment Data to AHS Respondents

The AHS data does not include information about geographical area when the information might enable identification due to small numbers. Therefore part of the total sample has metropolitan area identification codes suppressed. All such respondents are necessarily dropped from the analysis. This likely tends to bias the sample in favour of larger metropolitan areas.

The AHS definitions for New England metropolitan areas are based on aggregations of cities, towns, and some county portions, making them unsuitable for use with county-level BEA REIS employment estimates. In the absence of an alternative method, this required that respondents in 12 New England metropolitan areas were dropped from the analysis.⁴

Particular hypothesis-related criteria required that other metropolitan areas be dropped from the analysis. First, only individuals living in metropolitan areas with more than one county could be considered under the decentralization hypothesis. Second, only those living in metropolitan areas with clearly identified core/periphery areas corresponding to county lines could be used. Some metropolitan areas including more than one county had no counties defined as outlying.

Descriptive Results

The share of both total population and total employment in outlying counties of metropolitan areas increased over the 12-year period. During this period, the percentage of the population residing in outlying counties increased from less than 9 per cent to about 10 per cent. The percentage of dispersal outside central counties is relatively low but also climbed during this period – increasing from about 6.2 per cent in 1985 to about 7.3 per cent overall by 1997. Nationwide, manufacturing and FIRE (finance, insurance, and real estate) are substantially more dispersed than construction and wholesale employment.

Concurrent with this trend towards decentralization, the average commute distance showed a trend towards increasing distance over time in our sample of AHS respondents ([Table 18.1](#)). The average commute lengthened slightly through this period, though it declined somewhat from 1995 to 1997.

Table 18.1 Average commuting distance in the US, 1985–1997

Year	Commute (miles)
1985	10.7
1991	11.1
1993	11.0
1995	11.9
1997	11.3

Source: American Housing Survey

There is some variance by Census region, as shown in [Table 18.2](#). AHS respondents in selected metropolitan areas located in the northeast, northwest, and southern states have a similar average commute length, ranging from 11.2 to 11.5 miles. Those in the western Census region have a shorter commute length.⁵

Table 18.2 Metropolitan average commute by region in the US, 1985–1997

Region	Commute (miles)
Northeast	11.2
Midwest	11.5
South	11.3
West	10.6

Source: American Housing Survey

It is clear that demographic characteristics play a role in commute length. For example, as shown in [Table 18.3](#), men have longer commutes than women, and residents of owner-occupied units have longer commutes than renters.

Table 18.3 Commute by sex and tenure in the US, 1985–1997

Sex and Tenure	Commute (miles)
Male	12.0
Female	9.7
Owner	12.4
Renter	9.8

Source: American Housing Survey

Empirical Strategy and Variables

To examine how sprawl influences the commute, we estimate commute length as a function of employment dispersal, individual occupation, and life-cycle factors. Other independent variables include demographic and economic characteristics of the individuals and households, such as income, the presence of dual earners, sex, race/ethnicity (African Americans, Asian Americans, and Latinos are represented with indicator variables), and educational attainment.⁶ In addition to the respondent's age (and a squared age term to reflect nonlinearity in the relationship between age and travel), life cycle characteristics are included (whether the respondent is married and the number of children in the household).

Household characteristics that are expected to affect chosen commute length include housing tenure (renter or owner) and the number of automobiles owned by the household. Housing costs and income are included as explanatory variables. These are instrumented in later regressions.

Finally, in addition to variables representing both total employment decentralization and decentralization of employment by industry (percentages represented as whole numbers), we include several other measures of urban form: population decentralization, total population and total employment, and land area of the counties in the metropolitan area. A single intra-metropolitan indicator variable is included, representing whether the housing unit of the respondent is located in the central business district. Indicator variables for the Census regions are included to reflect differences in weather and transportation infrastructure that might vary by US region. A variable representing an independent time trend (YEAR) is included. Variables and labels are listed in the appendix.

Several estimation strategies are used to investigate the hypothesized relationships between commute distance and employment decentralization. The initial analysis is carried out using a single equation and ordinary least squares (OLS), and all observations are treated as independent despite the repeated nature of the panel. Because income and housing cost are used as explanatory variables in this model, subsequent models correct for the potential endogeneity of these variables by using a two-stage instrumental variables technique. In later models we use panel regression techniques that separately account for cross-sectional variation (between the workers in

different housing units) and variation over time (for each housing unit, for all workers living in the unit over the twelve-year period).

Analysis and Discussion

The regression results are shown in Tables 18.4 and 18.5. Table 18.4 is an OLS regression of individual commute length on a variety of factors, including suburban employment shares at the 1-digit SIC level. Construction and wholesale employment dispersal are associated with shorter average commutes, while manufacturing and government employment dispersal indicate longer commutes. Retail and service employment does not appear to be strongly associated with commute length. (Not shown is the same regression using the aggregate suburban employment share; the coefficient in that case is -0.299, implying that a 5 per cent increase in the amount of employment in a metropolitan area's outlying counties will lead to a 1.5 per cent reduction in the average commute distance, equivalent to a reduction of less than a tenth of a mile.)

Table 18.4 OLS on log commute distance using pooled panel, with industry by sector

RHS variables	Coefficient	Std. Error	t
Housg_Cost	0.025	0.011	2.28
RHine Person	0.858	0.103	8.35
RHine Person2	-0.041	0.006	-7.28
Married	0.037	0.014	2.64
Educ	-0.002	0.003	-0.67
Latin	0.025	0.021	1.17
Black	0.131	0.016	8.39
Asian	-0.001	0.031	-0.03

Age	-0.005	0.002	-2.24
Age2	0	0	-1.38
Male	0.097	0.013	7.54
%child	0.244	0.029	8.29
Apartment	-0.156	0.016	-9.75
Cars	0.081	0.007	11.81
YR Moved	0	0	-2.32
No HHAdult	0.030	0.008	3.61
Renter	-0.077	0.016	-4.88
Pop	0	0	-2.63
Emp	0	0	2.74
Landarea	0	0	5.32
CMSAflag	0.067	0.016	3.95
CBD	-0.236	0.011	-20.44
NE	-0.164	0.027	-5.27
MW	-0.022	0.022	-0.98
WEST	0.052	0.022	2.29
YEAR	0.011	0.002	7.02
MFGsub_emp	0.381	0.153	2.48

SERVsub_emp	-0.407	0.534	-0.76
CONS_emp	0.025	0.011	-2.17
WHOLE_emp	0.858	0.103	-4.44
RETAIL_emp	-0.041	0.006	1.61
FIRE_emp	0.037	0.014	-0.60
GOV_emp	-0.002	0.003	2.36
Constant	0.025	0.021	-7.06

N = 45,082

F (33, 45048) = 101.92

Adj R-squared = 0.0688

Source: American Housing Survey

Table 18.5 Two-Stage least squares on log commute distance controlling for panel effects

RHS variables	Coefficient	Std. Error	t
Housg_Cost	-0.037	0.044	-0.84
RHine Person	0.729	0.101	7.19
RHine Person2	-0.033	0.006	-6.04
Married	0.027	0.014	1.88
Educ	0.005	0.003	1.37
Latin	O.D18	0.023	0.78
Black	0.106	O.D18	5.88

Asian	-0.041	0.034	-1.21
Age	-0.001	0.003	-0.35
Age2	0.000	0.000	-2.72
Male	0.099	0.013	7.47
%Child	0.256	0.036	7.10
Apartment	-0.160	0.019	-8.63
Cars	0.070	0.007	10.21
YR Moved	0.000	8.47E-06	-2.63
No HHAdult	0.034	0.009	3.59
Renter	-0.079	0.017	-4.60
Pop	-3.11E-08	2.24E-08	-1.39
Emp	6.04E-08	4.08E-08	1.48
Landarea	7.16E-06	1.83E-06	3.90
CMSAflag	0.057	0.020	2.91
CBD	-0.250	O.D15	-16.40
NE	-0.172	0.034	-5.05
NW	-0.017	0.028	-0.59
WEST	0.072	0.028	2.54
YEAR	0.010	0.001	7.50

Sub_emp -0.335 0.139 -2.40

Cons_emp -2.650 0.523 -5.06

N = 45,082

R-sq: within = 0.0081

between= 0.0908

Obs per group: min = 1

Avg= 2.3

Source: Calculated by authors.

These differences may be due to the pattern of clustering characteristic of these industries. Specifically, construction and wholesale employment may not be as clustered within a given county-level pattern of dispersion, while manufacturing and government employment may be. There is evidence that certain kinds of manufacturing firms (particularly, small manufacturers in the more technologically advanced industries) tend to cluster to realize Marshallian agglomeration economies. Meanwhile, retail and service firms do cluster to some extent, but because they are population-serving they tend to also be pulled out to follow the more dispersed pattern of the residential development that they serve.

This clustering explanation for the regression results shown in this initial research makes sense only to the extent that industry sector clustering patterns drive overall commute patterns, because we have not controlled for occupational characteristics of residents in this analysis. Exploring this relationship is a subject for future research.

[Table 18.5](#) controls for the endogeneity of housing expenditure, using an instrumental variables procedure in which predicted housing expenditures (HOUSG_COST) are used in place of the observed expenditures. Predicted housing expenditures are obtained by using coefficients on the independent variables from a simple hedonic price model. While this model is clearly an improvement on the previous one, the coefficient on the overall share of employment in the suburbs (SUB_EMP) is more or less the same. Commute length is shorter the more suburbanized all employment.

Conclusion

Our evidence supports the argument that suburbanized employment is associated with shorter commutes on average. This is not to say that commutes are shortening as cities expand their footprint; indeed, they are getting longer (Kahn, 2000). Other factors, such as an increase in the number of two-worker households, or households deciding where to live based on other factors, are apparently generating longer trips to work. However, the marginal effect of job suburbanization appears to be to bring jobs and workers closer rather than the reverse. Put another way, the average commute would be longer still if jobs were not suburbanizing.

That said, a closer look reveals this outcome is neither transparent nor unambiguous. The suburbanization of construction, wholesale, and service employment is associated with shorter commutes, while manufacturing and finance deconcentration (weakly) explain longer commutes. These results may reflect a combination of industry agglomeration effects, differential job location stability by industry, and historical transitions.

What does this mean? First, our study is exploratory and thus preliminary. Many loose ends remain, suggesting numerous ways to refine and extend our understanding of these relationships. On the one hand, the AHS data do not allow us to test how commute duration has changed. This ignores the substantial role of congestion in urban form and behaviour debates (Solow, 1973; Wheaton, 1998). Other evidence suggests that congestion may be lower in outlying areas, so the dispersal of employment to outlying counties within metropolitan areas may actually reduce commute duration more than it does commute distance. Alternatively, if job dispersal to outlying counties is associated with a higher amount of non-work travel by affluent households living in those areas, commute duration could increase despite a slight decline in commute distance. This is because peak period travel duration is only partially accounted for by work trips; non-work trips make up a growing majority of trips made during peak periods (Giuliano, 1991).

In addition, while these results partially support the Crane (1996) hypothesis that commutes are longer for individuals with greater uncertainty about their future job locations and higher moving costs, our data do not permit us to explore that conjecture in detail.

Finally, even if further study provides consistent support for the ‘sprawl shortens commutes’ story, the public policy implications require more discussion. On the one hand, there is the issue of whether, on net, jobs follow workers to the suburbs or vice versa. The evidence is mixed on either count, and the simultaneity of this process is challenging to nail down empirically. If jobs returned to the city, is it possible that workers would follow suit? On the other hand, neither the influence of urban form on travel behaviour nor the merits of concentrated versus dispersed urban growth are well understood. The former is yet another complex set of nuanced behaviours awaiting better data and empirical strategies (Boarnet and Crane, 2001). Regarding the latter, we do not know how the social and economic costs of sprawl, however measured, compare with their benefits (Crane and Greenstein, 2002). A key purpose of this line of research is to provide evidence needed for both kinds of evaluation.

¹ This is different from saying that commutes should or should not be reduced. Urban theory suggests that traffic congestion by itself, as an externality, leads to overly decentralized monocentric cities, but that the consequences are less clear when employment also decentralizes (Anas et al., 1998). Thus, unpriced congestion by itself contributes to longer commutes, holding employment location fixed. However, the present study only explains commuting, not its welfare economics.

² But see Bento, et al. (2002) and Chen, Ewing and Pendall (2002) for recent efforts aimed at explaining aggregate travel outcomes with sprawl measures.

³ Central cities include the largest city in an MSA; any additional cities with more than 250,000 population or 100,000 workers; any additional cities of at least 25,000 in size with a large employment base (greater than 75 per cent of population), 40 per cent of whose employed residents work there; and secondary non-contiguous urbanized areas that meet certain criteria. See <http://www.census.gov/population/www/estimates/mastand.html>, Part III, Section 4.

⁴ The metropolitan areas dropped were the Bangor (ME) MSA; the Barnstable-Yarmouth (MA) MSA; the Boston-Worcester-Lawrence (MA, NH, ME and CT) CMSA; the Burlington (VT) MSA; the Hartford (CT) MSA; the Lewiston-Auburn (ME) MSA; the New London-Norwich (CT-RI) MSA; the New York-Northern New Jersey-Long Island (NY, NJ, CT and PA) CMSA; the Pittsfield (MA) MSA; the Portland (ME) MSA; the Providence-Fall River-Warwick (RI and MA) MSA; and the Springfield (MA) MSA.

⁵ However, this sample excludes the two largest California CMSAs, for the data availability reasons given above, which likely reduces the average commute distance for the western region.

⁶ Only one individual from each eligible housing unit is used in the analysis to avoid the need to correct the standard errors for clustering within households.

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Appendix

Variables

Label	Definition
Commute	One-way commute length in miles (log)
Housg_Cost	Monthly housing costs (constant \$, log)
HHinc_person	Household income per person (log)
HHinc_person2	Household income squared (log)
Married	Married = 1
Educ	Years of education
Latin	Hispanic = 1
Black	Black = 1
Asian	Asian, PI = 1
Age	Age
Age2	Age squared
Male	Male = 1
%_child	Proportion of household members that are children
Apartment	Apartment dweller = 1
Cars	Number of cars
YR_Moved	Year last moved
No_HHAdult	Number of adults in household
Renter	Renter = 1

Pop	Population of metropolitan area
Emp	Employment in metropolitan area
Landarea	Land area of metropolitan area
CMSAflag	CMSA = 1
CBD	CBD = 1
NE	Northeast = 1
MW	Midwest = 1
WEST	West= 1
YEAR	Year
SUB_emp	Total suburban employment share in metro
MFGsub_emp	Manufacturing employment share in suburbs
SERVsub_emp	Service employment share
CONS_emp	Construction employment share
WHOLE_emp	Wholesale employment share
RETAIL_emp	Retail employment share
FIRE_emp	Finance, Real Estate, Insurance employment share
GOV_emp	Government employment share