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SCATTER

Sprawling Cities And TransporT: from Evaluation to Recommendations

Annex to D2 and D3 (Work packages 2 and 3)

Monographic report
Case city Bristol

Contract number: EVK4-CT-2001-00063

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1. OVERALL PRESENTATION OF THE CITY

1.1. Presentation of the study area

The study area for the Bristol case study comprises the former Avon County, which has been divided into four district authorities after the reform of the British institutional system: Bristol City, South Gloucestershire, Bath and Northeast Somerset, North Somerset (see fig. 1).
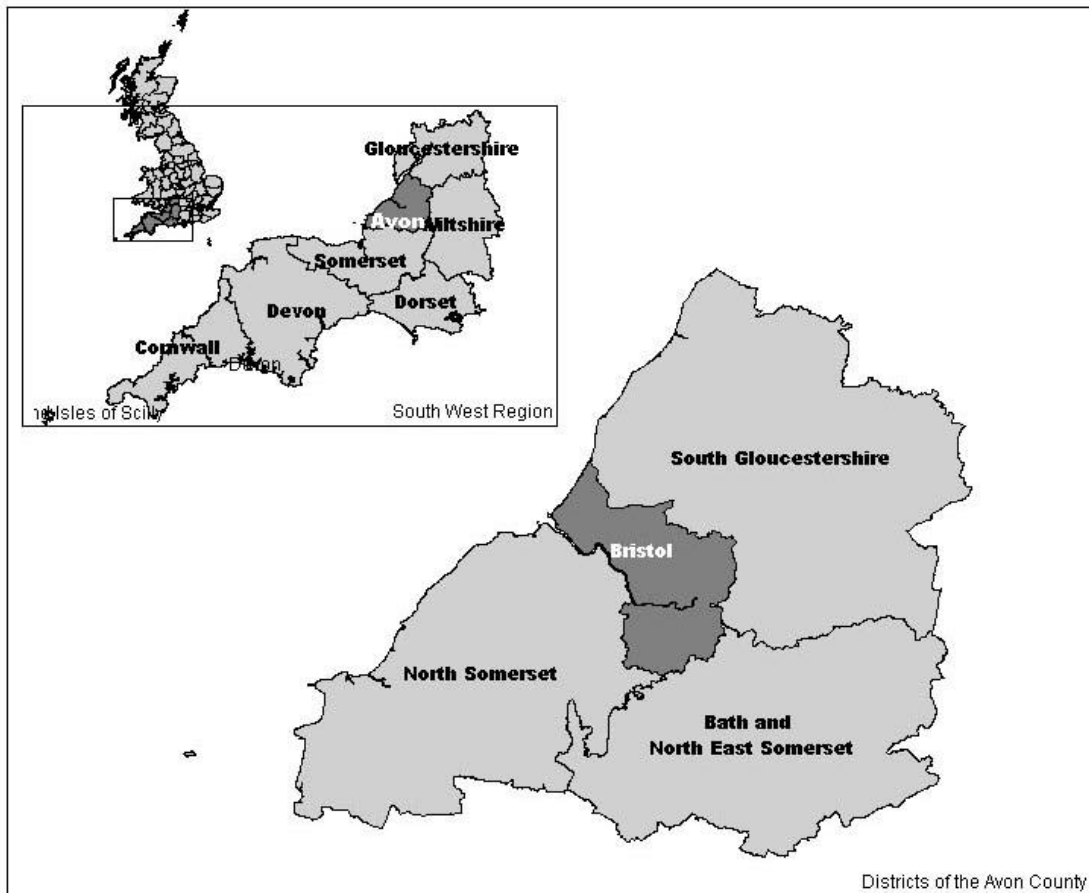
Figure 1: The location of the study area

The total area of this subregion is 1346.41 km2 and the total population is 983860 inhabitants in 2001.

	Total population	% of the population
Avon area	983860	100%
Bath and NE Somerset	169045	17%
Bristol City	380615	38%
North Somerset	188556	20%
South Gloucestershire	245644	25%

Table 1: Population percentages among districts 2001 (Source: Population Census, ONS)

The area has been divided in 3 zones (see fig 2): the urban centre has been defined as the City of Bristol urbanised area, and is surrounded by a first urban ring comprising areas with more than 40% of commuters travelling towards the urban centre of Bristol, and then by a wider hinterland. The whole area is covering a 30km radius area and is composed by 168

wards (the study unit) corresponding to the 1981 census geography. The core area comprises 27 wards, the first ring 46 wards and the hinterland the remaining 96 wards.

Figure 2: Urban definition of case study Bristol
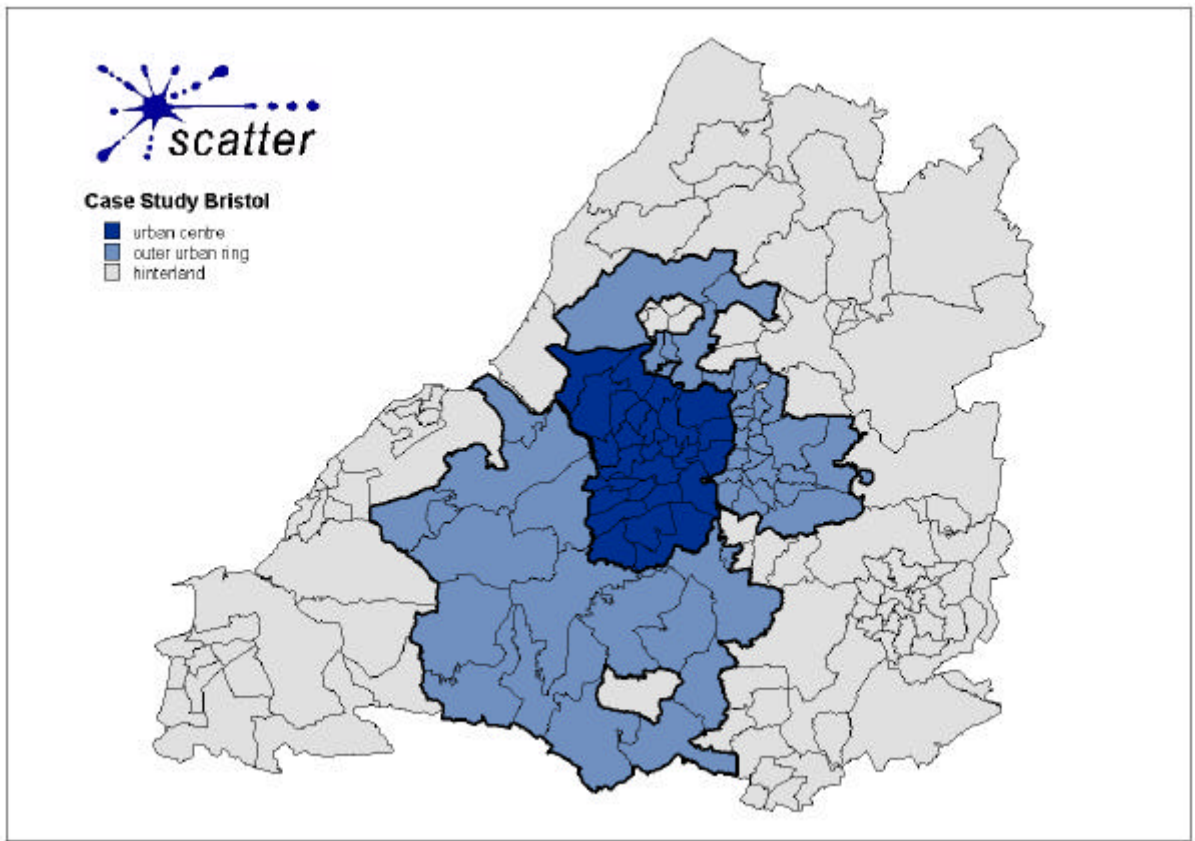
1.2. Recent evolution of the Bristol region

While data on employment and population are examined in another section of this report and in D3, a general comment can be made on the fact that these data confirm both the local development trends of the area and the disparities among the four districts. Population and employment have grown steadily in the last 20 years and projections suggest a high rate of growth for the next years. Employment in particular has had a significant growth with top figures of 44% growth in the South Gloucestershire district in the decade between 1991 and 2001. The only slow growing area is the Bristol City district. This is mainly due to the tightness of the administrative boundaries forcing most development to occur outside them and providing chances for growth only in the form of brownfields' redevelopment.

	Change 81-91 %	Change 91-99 %
Avon area	3.5	4.5
Bath and NE Somerset	3.0	2.3
Bristol City	-2.3	2.1
North Somerset	10.7	5.5
South Gloucestershire	9.3	9.5
Great Britain	2.8	2.9

Table 2: Population change % Avon area 1981-1999 (Source: Population Census, ONS Mid-year estimates)

	Change 81-91 %	Change 91-01 %
Avon area	11.6	16.7
Bath and NE Somerset	14.0	11.0
Bristol City	4.0	4.2
North Somerset	19.5	24.4
South Gloucestershire	24.9	44.8
Great Britain	6.0	2.9

Table 3: Employment change % Avon area 1981-2001 (Source: Annual Census of Employment)

1.3. Variables used for statistical analysis

The spatial unit of analysis is the ward.. The following four variables have been studied in the statistical analysis:

- Population: total population by ward (1971/1981/1991)

- Employment: number of employees counted at the place of residence (1971/1981/1991)

- Commuters: Number of commuters by wards. Data are taken from the 10% sample census and then multiplied by 10 (1981/1991)

- Average length commuted: data are supplied as number of commuters per classes of distances. The average length has been calculated as a weighted average using the number of commuters in each class as the weight (1981/1991)

2.   STATISTICAL ANALYSIS

2.1. Development of the average growth rates

The Bristol city region did not grow very much in terms of population and employment between 1971 and 1991. In fact from 1971 to 1981, the population fell by some 0.5% while it grew modestly from 1981 to 1991 by some 3% (Figure 1). In fact during this period employment grew much faster reflecting, we believe, an increase in participation in the labour market as well as an increase in long distance commuting from outside the city region. These trends are explicable in terms of macro-economic and demographic factors. First, the decade of the 1970s in the UK was a period where there was massive loss of manufacturing jobs and declining birth rates and this probably accounts for the slight fall in population during this period. The macro economy was depressed in the 1970s as the 1960s boom turned to recession, which only began to correct itself in the mid 1980s. The early 1990s was also a period of recession. Although we do not have finalised figures for the overall population and employment growth from 1991 to 2001 – these will be available in 2003 from the 2001 Census of Population – it is already clear that population has grown at a much faster rates in this region during the last 10 years. The increase in participation rates that is reflected in the data from 1971 to 1991 is consistent with the rise in female employment – much of it part-time during these years. We cannot separate this from long distance commuting but this simply reflects the fact that this city region is closely connected to urban development to the east and the immediate west where the South Wales city region centred on Newport and Cardiff begins on the western edge across the Seven Estuary. We know there is substantial commuting into Bristol from this area but the physical barrier of the Estuary and the cultural barrier of England versus Wales has forced us to define the boundary of the Bristol region along the river.
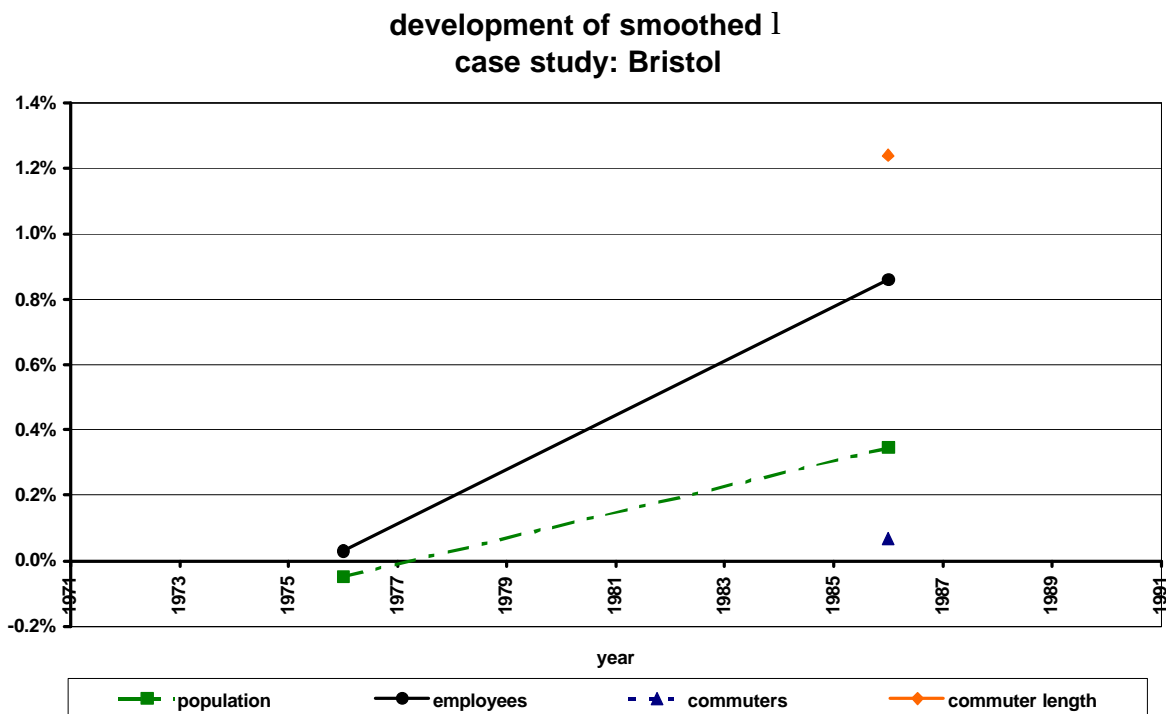

**development of smoothed $\mathbf{l}$
case study: Bristol**

Figure 3: Average annual growth rate of $\tilde{I}^{population}(t)$, $\tilde{I}^{employees}(t)$, $\tilde{I}^{commuters}(t)$ and $\tilde{I}^{commuter\ length}(t)$

The average growth rate for population, employment and commuting is consistent with these comments. The growth rate in population is increasing but at a slower rate than employment. We only have one growth rate for commuting but this is higher in terms of percentage annual growth than population and employment, again consistent with our supposition that long distance commuting is affecting this region (Figure 3).

2.2. Development of the deviations from the average growth rates

The deviations from the average growth rates in both population and employment reflect fairly classic changes in the spatial structure of the Bristol region. In essence, the urban centre shows negative growth and this is reflected in the rates while the outer urban ring shows the greatest growth and the hinterland which is furthest away from the centre of the region in downtown Bristol has positive growth but less than the outer ring. What is slightly surprising is that for both population and employment, these rates converge over the period (Figure 4). This means that the rate of decline of the urban centre gets less during this period while the rates of growth of the outer ring and the hinterland also get less. We do not consider that this is very meaningful and we believe that these rates will change towards more conventional patterns in the decade of 1991 to 2001 for which we do not yet have final data. In short, we consider that the growth in both population and employment in the outer ring and the hinterland will increase while decline in the urban core will get greater during this more recent period, thus reflecting a more classic pattern. We cannot speculate on the meaning of the difference in growth of commuting and commuter length during this period as we only have one annualised growth rate to deal with.

In terms of the detailed spatial pattern of these deviations from the average growth rate, what we see in Bristol for population and employment is a pattern which reflects these broad observations about positive growth in the suburbs and negative in the urban cores. One key issue in this region is that it is not strictly speaking monocentric. The town of Bath which merges in to Bristol on the eastern side is a strong centre which is, in fact, much longer established historically than Bristol, going back to Roman times. The town is on the western border of the region although is contained within the hinterland of the region. The same is true of the town of Western Super Mare on the south west of the region. Both these towns complicate our analysis. Moreover the region to the south of Bristol is rural and has suffered from a drop in population and employment through restructuring of agriculture; this area is within the outer ring. Unlike Brussels, for example ,or even Rennes, we do not see the classic radial pattern of decline in the core, with growth in the outer ring and hinterland for this is distorted by Bath and Western Super Mare. Basically what we do see is decline in the urban core of Bristol but also decline in the urban core of Bath for employment and population with employment declining faster. We see growth in the outer ring and in the hinterland in the Western Super Mare area but also in the north and the east and south east. But this is extremely patchy. There is not the perfect radially concentric pattern that we see in Brussels or Rennes (Figures 5 and 6).

Thus our interpretations of the deviations in the growth rates from these overall averages is that the patterns are complicated by the urban morphology of the region which is based on a central core and two competing smaller cores in the hinterland. Basically were we able to factor out the effect of these other cores (and this might be possible from detailed commuting data), we would probably find that the classic monocentric pattern based on Bristol would give similar growth rates to those in similarly monocentric cities such as Brussels and Rennes. This suggests that a detailed analysis of suburbanisation and sprawl should begin to disentangle different effects in the urban field associating sprawl with different centres in such polynucleated urban landscapes.
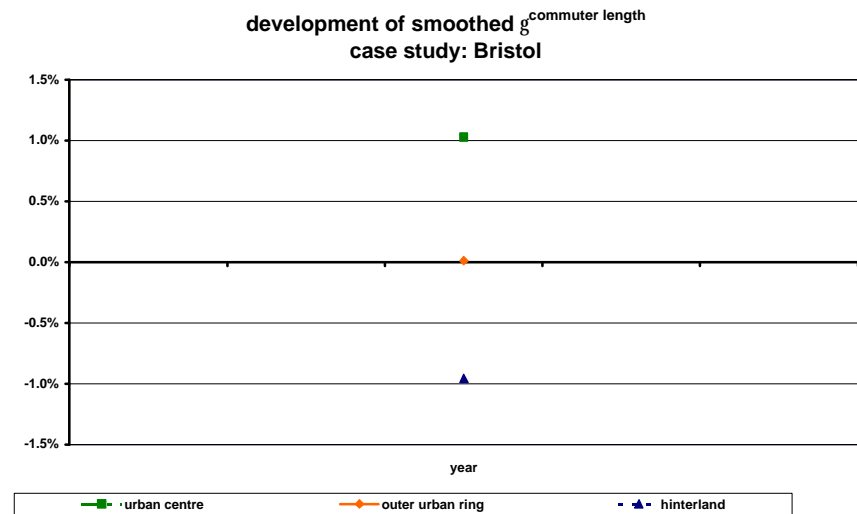
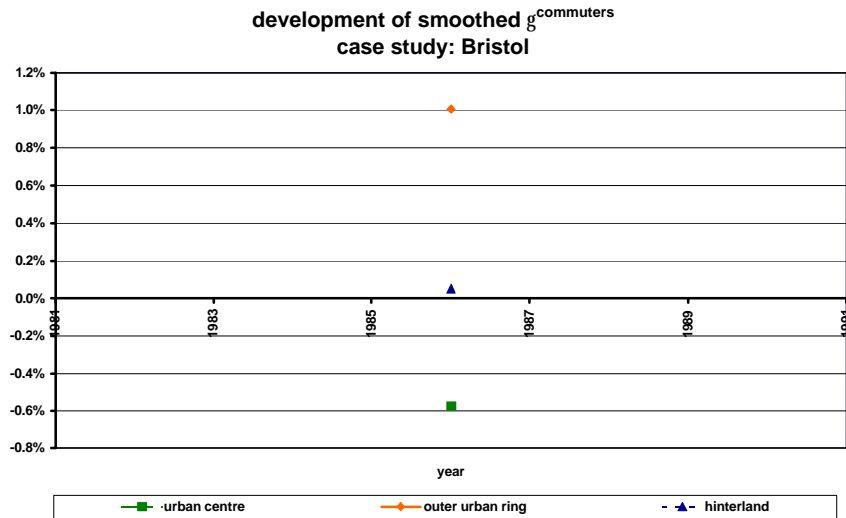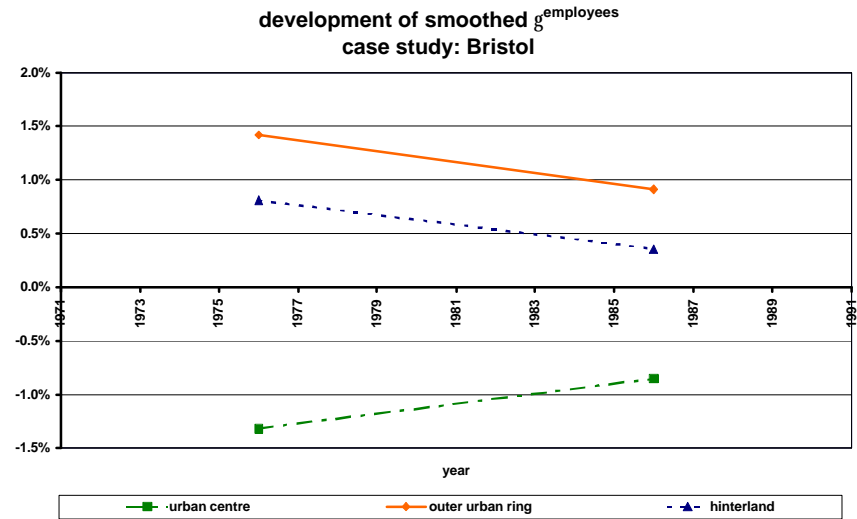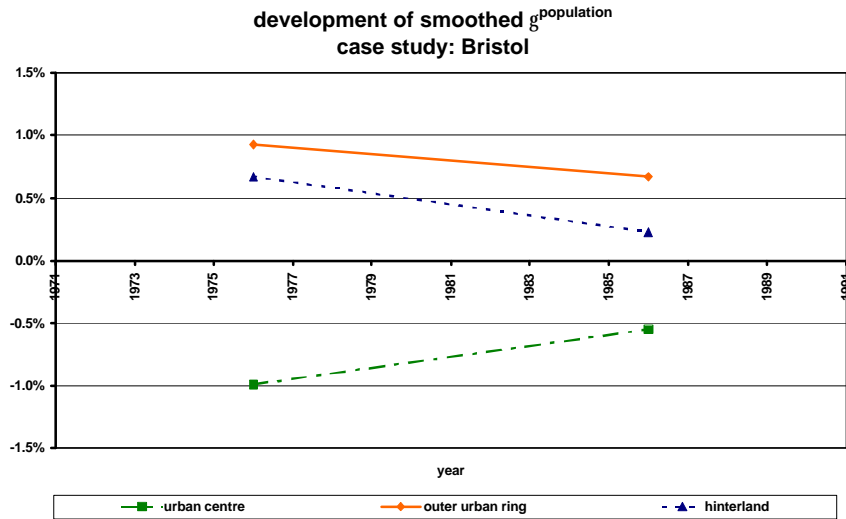*Figure 4: Annual deviations from the average growth rate $\tilde{g}^{\text{population}}(t)$, $\tilde{g}^{\text{employees}}(t)$, $\tilde{g}^{\text{commuters}}(t)$ and $\tilde{g}^{\text{commuter length}}(t)$*
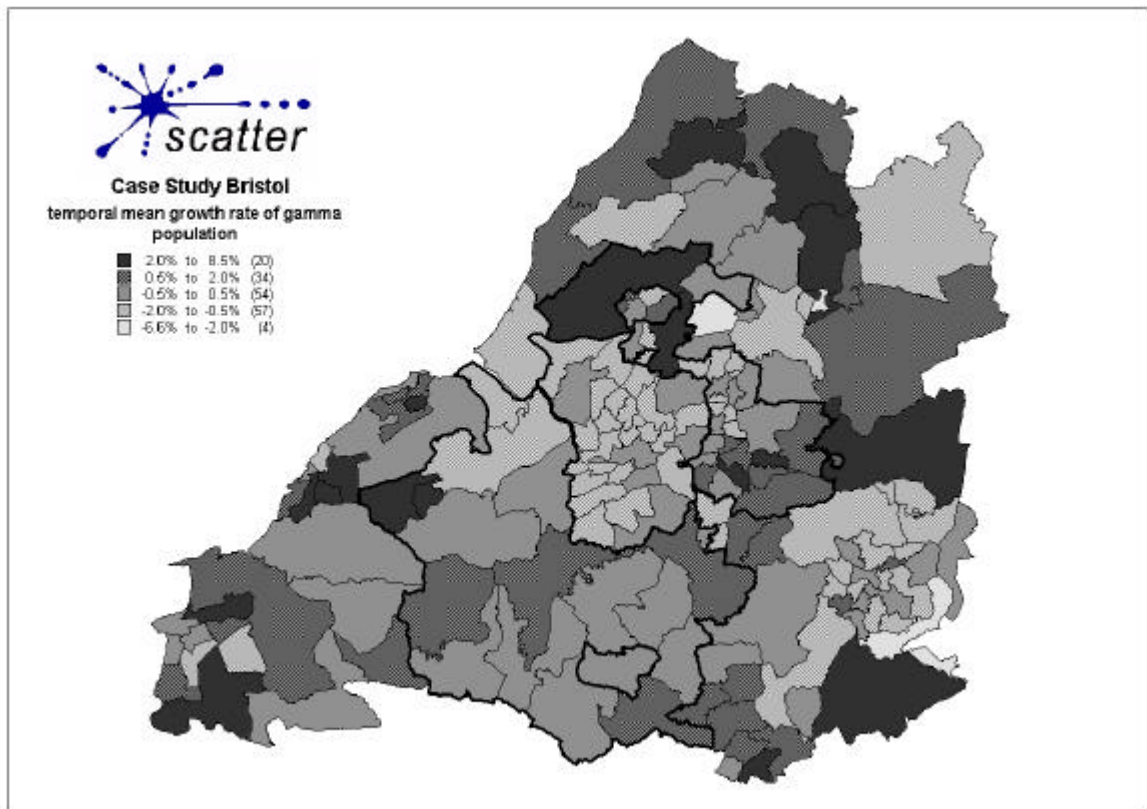
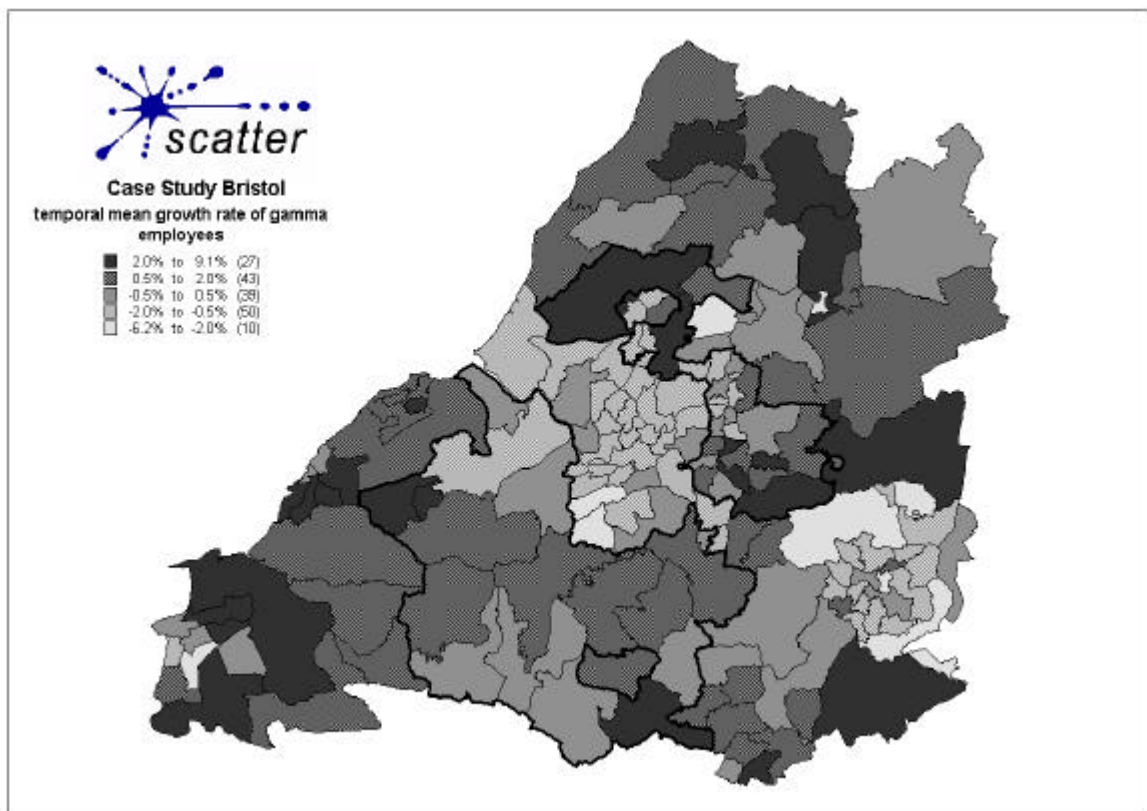*Figure 5: Spatial distribution of the temporal mean growth rate of $\tilde{g}^{\,population}$*

Figure 6: Spatial distribution of the temporal mean growth rate of $\tilde{g}^{\,employees}$

2.3. Development of the H-measure

The H measure is a measure which reflects the centre of gravity of the variable in question within the region. The way this is defined as specified in Working Paper 3 is as a mean squared distance weighted by the population or employment. In fact, we consider that this measure might be interpreted as a weighted distance although the way we have considered it so far is simply as a shift in relative values over time.

At the three points in time, we have computed H and $H_{relative}$ for population, employment, commuter and commuting length and these are graphed with respect to the base year of 1971 for population and employment and 1981 for commuting and commuter length in Figure 7. What these show is that the centre of gravity of the region is shifting outwards during these time periods. In the case of population the shift is some 20 per cent over 20 years whereas this is greater for employment which is up to 30 percent and increasing. This is consistent with what we observe casually in the Bristol region with rapid employment growth in the outer ring and hinterland and declining population in Bristol centre. The shift in commuting reinforces this for the one date shown although the shift in commuter length is in the negative direction. We consider that the data and the measures are not sufficiently well defined to be able to place much confidence in this shift. However the measure does reveal an increasing suburbanisation around the core of the city region which is substantial. This is consistent with the patterns of growth in Figure 5 and 6 and also indicates that even in the face of very low growth in this city region, there is substantial restructuring taking place.
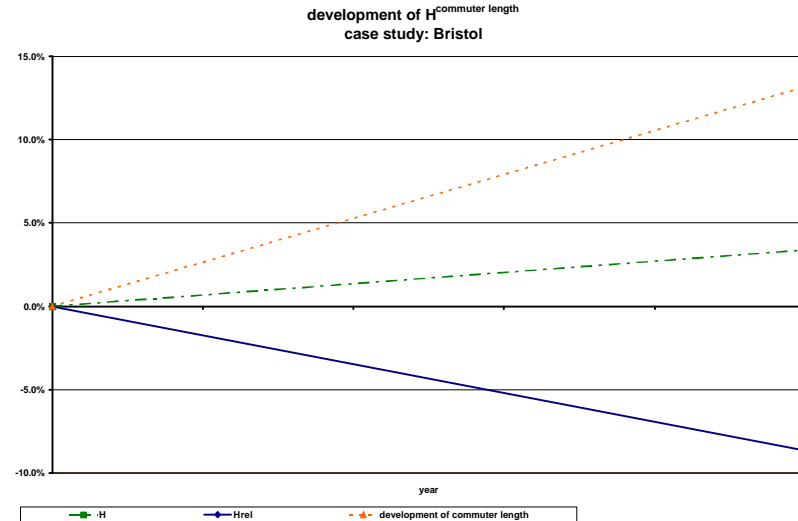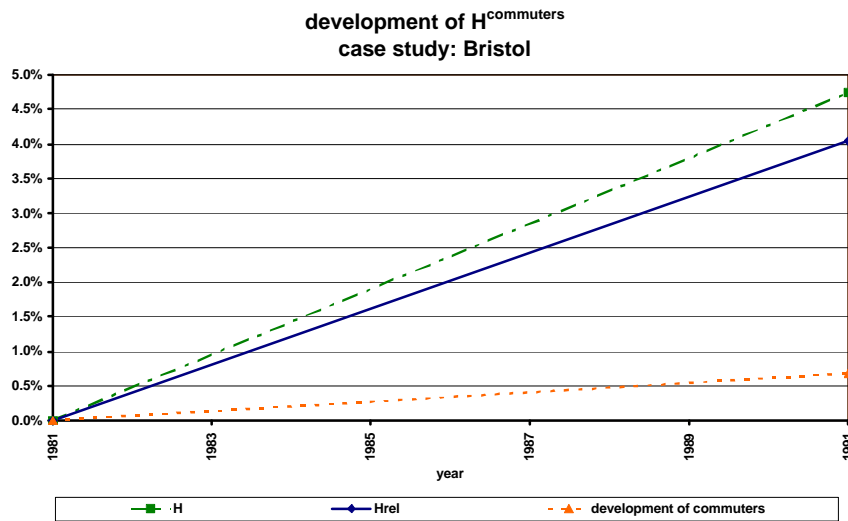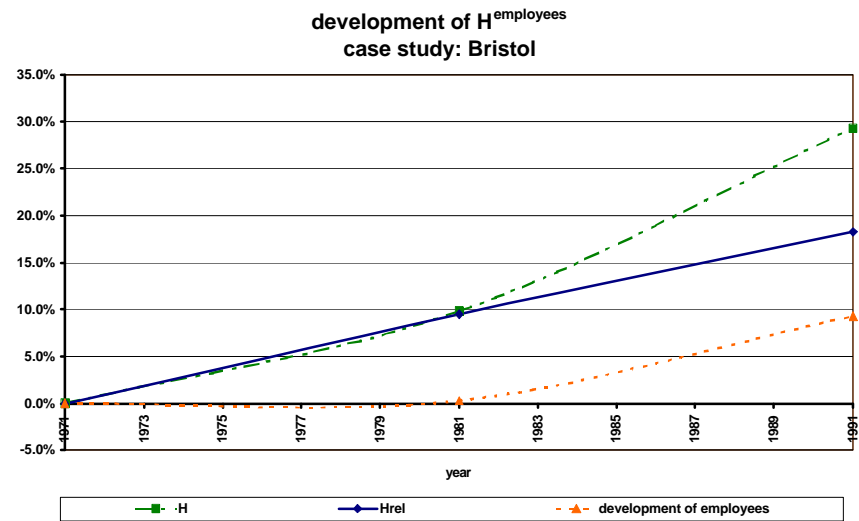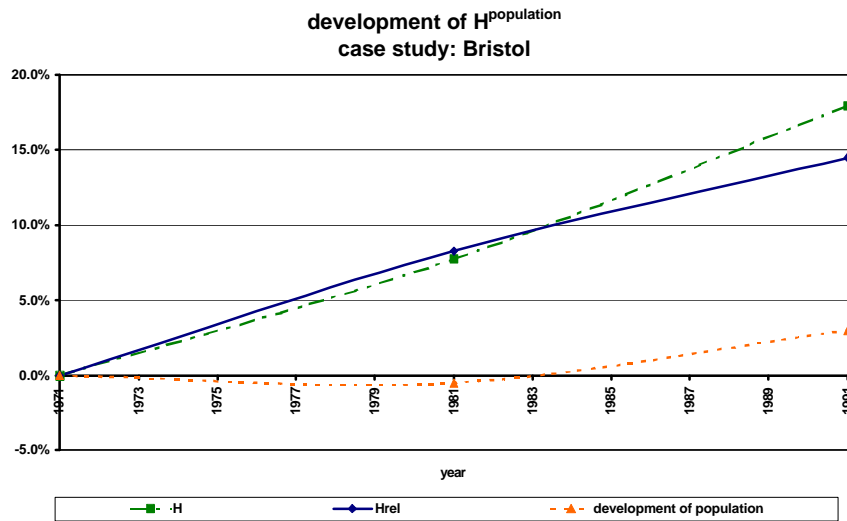
Figure 7: Development of $H^{\text{population}}(t)$, $H^{\text{employees}}(t)$, $H^{\text{commuters}}(t)$ and $H^{\text{commuter length}}(t)$

2.4. Development of global and local Moran I

The Moran statistic is a measure of spatial autocorrelation. It essentially measures the extent to which the space in question is homogeneous structured or heterogeneous. In a sense, it might be interpreted as a measure of scatter but at the level of analysis which is used in our approach to sprawl, it cannot be used to imply scatter in the sense of broken-up urban morphology. For Bristol, Figure 8 shows that the degree of autocorrelation changes very little over the 20 year period for the population and employment. In short, there is not much restructuring in terms of the way populations and employment relate to each other overall, although these is a slight drop in value showing that the measure of similarity between adjacent population is getting less. This could be taken as the fact that the region is beginning to concentrate in clusters a little more but the change is too small to be significant.

In terms of the spatial pattern, then these statistics show that the pattern of employment and population for 1991 show high autocorrelation in the core area and high on the eastern edge of the region with lower values in the outer ring (Figures 9 to 12). As expected, given the complex morphology of the region, these patterns are not very clear. The shift from 1971 to 1991 however does show that the inner core is getting more clustered while the outer ring and hinterland is becoming more homogenous, more evenly spread. There is not much else one might say about these indicators as the patterns they reveal are convoluted by many other factors. As a measure of homogeneity or heterogeneity these are useful in showing the complex pattern and the general change but it is hard to interpret these as being measures of scatter.

development of global Morans I ($d_{1/2}$=5km) case study: Bristol
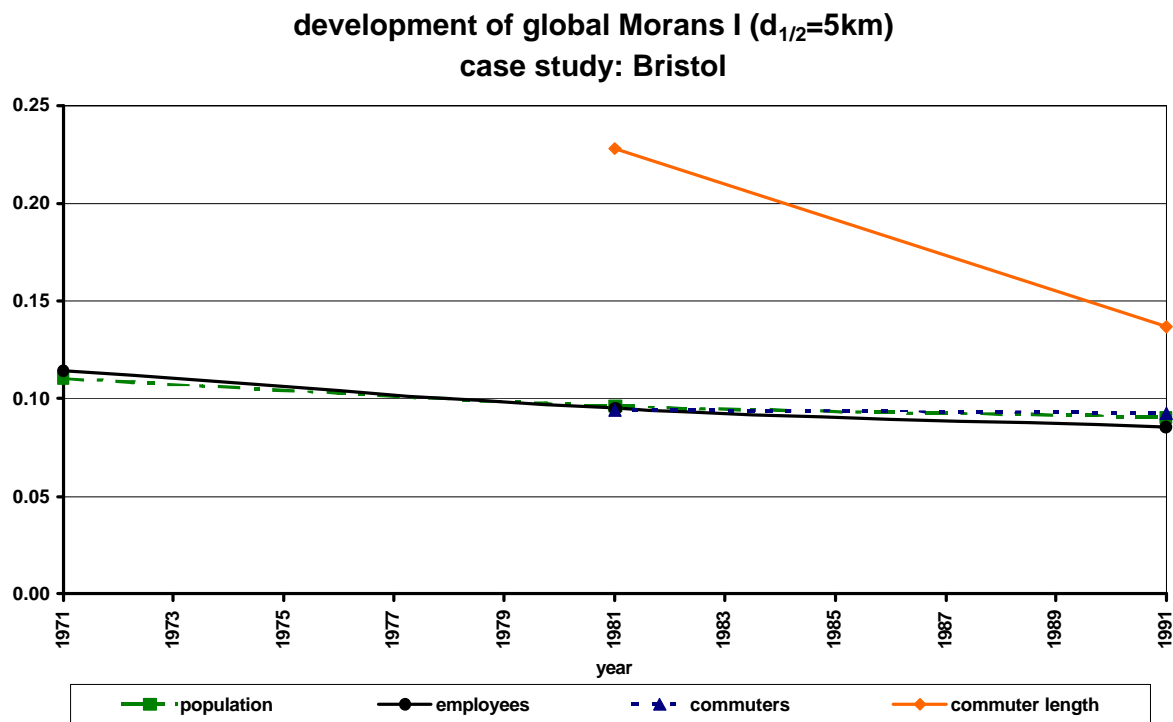

Figure 8: Development of global Moran I of population, jobs, income by family, commuters and commuter length
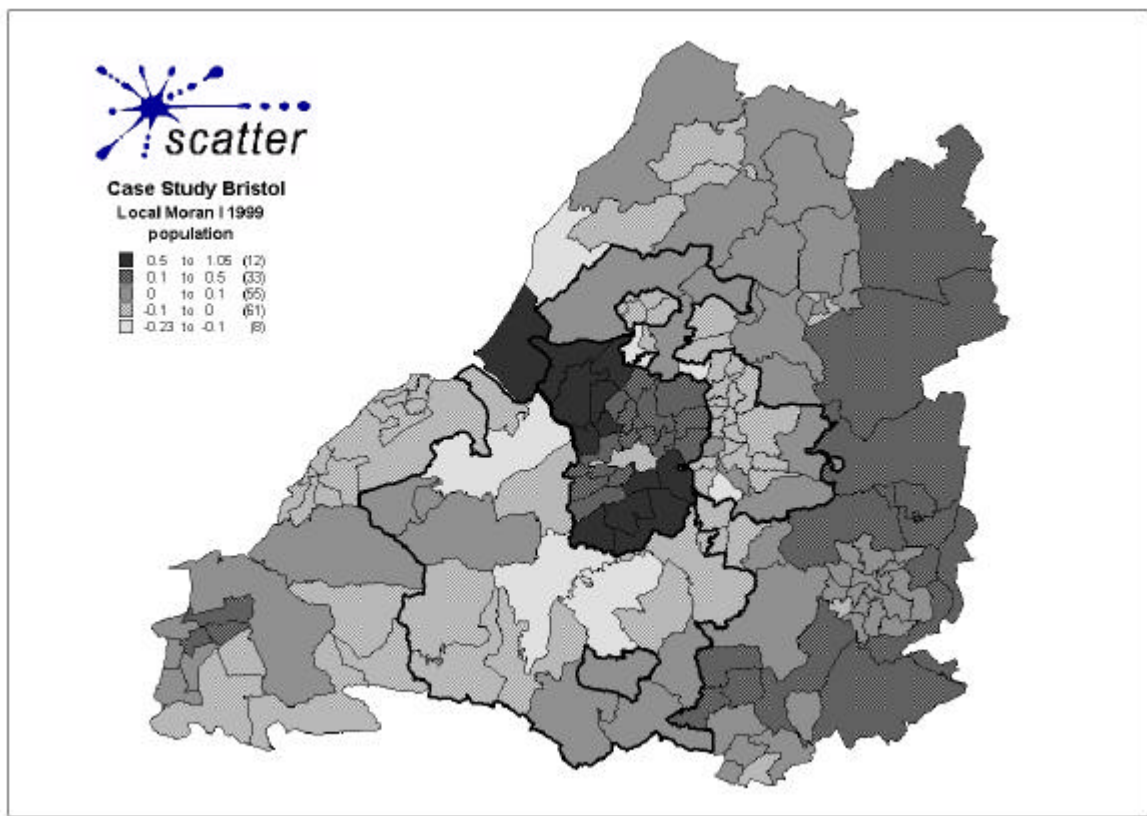
Local Moran I:

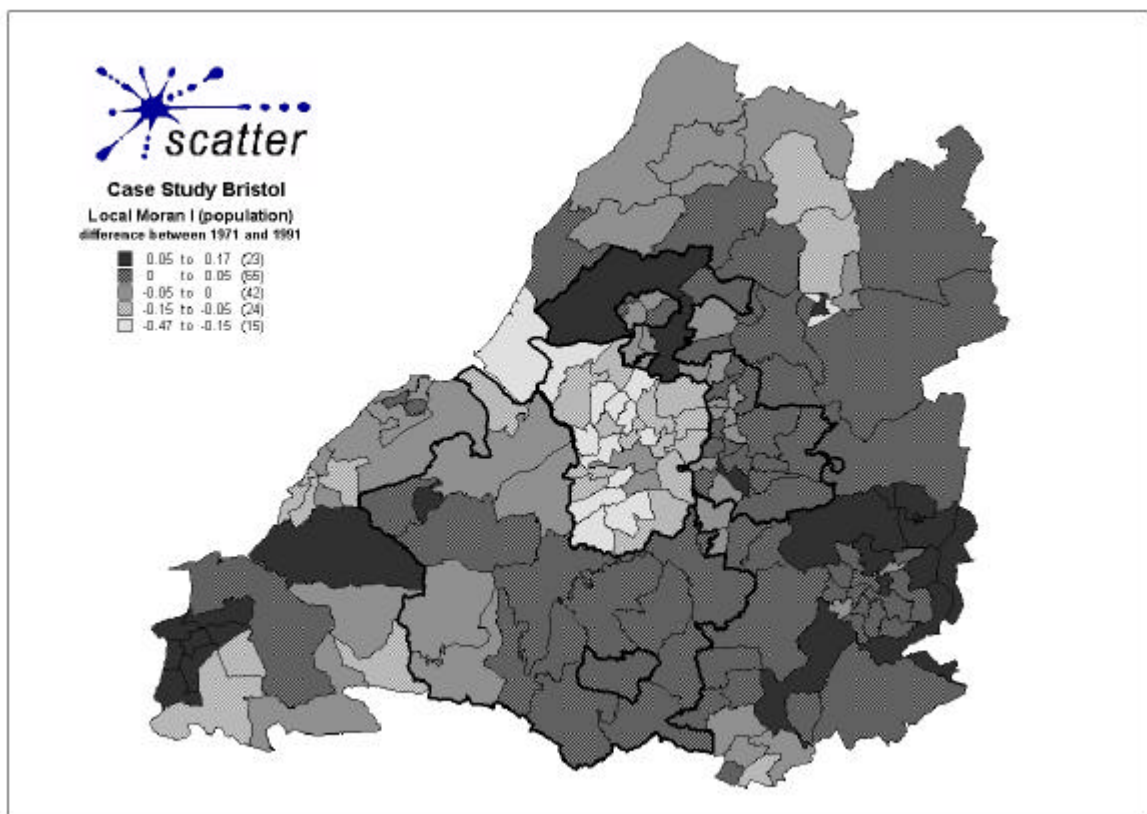*Figure 9: Spatial distribution of Local Moran I for population*

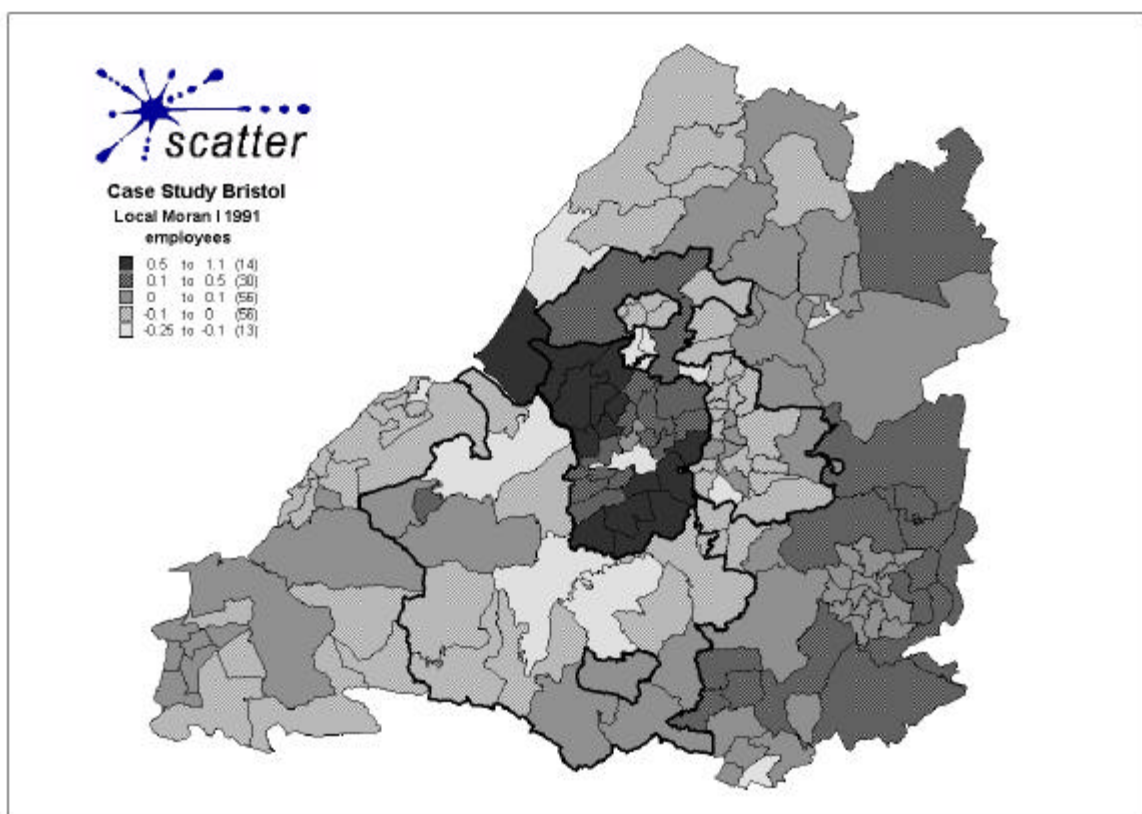*Figure 10: Development of Local Moran I for population*

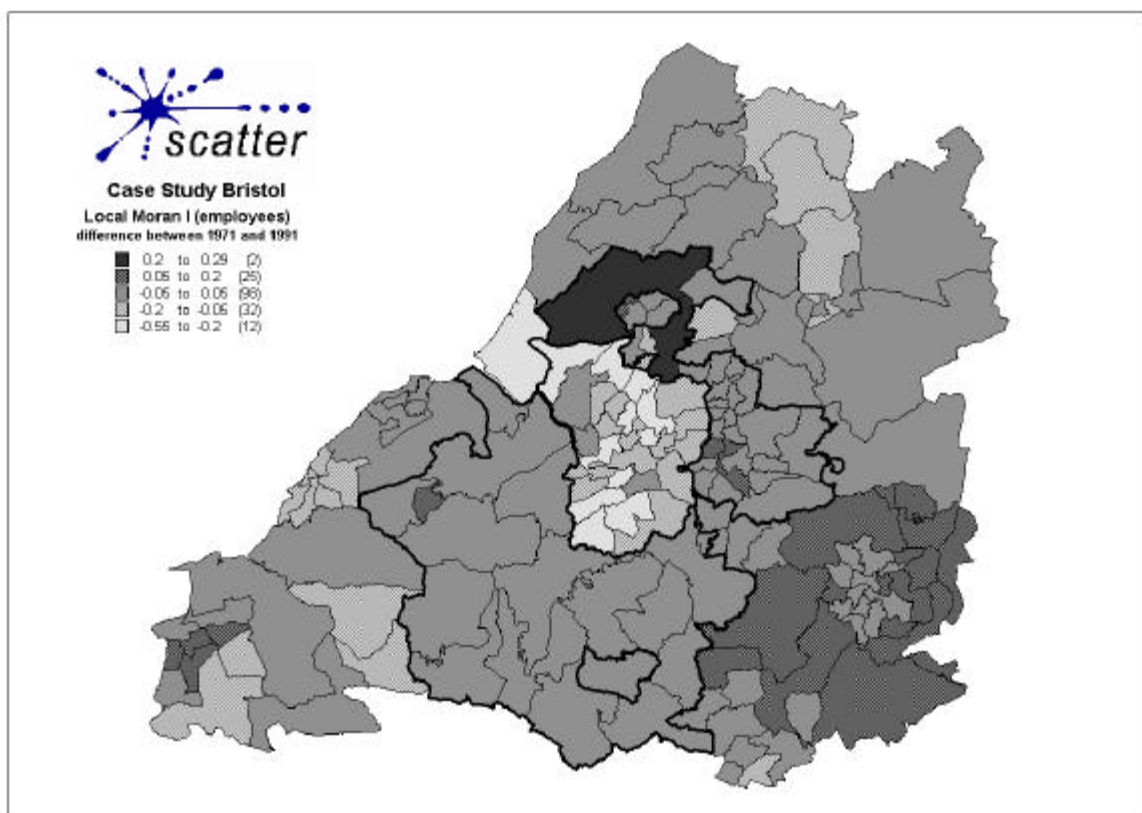*Figure 11: Spatial distribution of Local Moran I for employees*

Figure 12: Development of Local Moran I for employees

3. INSTITUTIONAL CONTEXT AND PLANNING SYSTEM

3.1. Institutional context

Local government in the UK has various functions and responsibilities, e.g. social services, education, environmental health, transport and land use planning. Until April 1996, local government services were organised via a two-tier system of local authorities: district and county councils (outside of the major conurbations). Following the reorganisation of local government, unitary councils are now providing the entire range of local government services with some authorities having joint arrangements for particular functions. The study area for the SCATTER project has been identified on the base of the pre-review Avon County. Table 1 shows the current institutional structure of the area.

COUNTY (number of districts pre-review and date for implementation of any change)	NEW STRUCTURE (district councils on which unitary authorities are based)	CEREMONIAL ARRANGEMENTS
Avon (6) (April 1996)	4 unitary authorities: a) Bristol b) North Somerset (formerly Woodspring) c) Bath and North East Somerset (formerly Wansdyke + Bath) d) South Gloucestershire (formerly Northavon + Kingswood)	Avon abolished. A separate Lieutenancy created for Bristol. N Somerset and Bath & NE Somerset deemed part of Somerset. S Gloucestershire deemed part of Gloucestershire.

Table 4. Structure of the institutional reform

3.2. The planning system

3.2.1. National Level

The framework of planning policy in Britain is structured according to a clear hierarchy of guidance from national, regional and local planning bodies. There is no specific policy or plan for the whole country but national guidance takes the form of Planning Policy Guidance Notes first prepared in 1988. PPGs are not legally binding but local authorities must show that their development plans take account of and conform to national policies.

3.2.2. Regional Government

At the regional level Regional Planning Guidance (RPGs), prepared jointly by the regional planning conference and the relevant government office, set out broad strategic policies for land use and development. In the South West, the appropriate bodies are the South West Regional Planning Conference (SWRPC) and the Government Office for the South West (GOSW). RPG10, the regional guidance for the South West region:

- provides a regional spatial and transport strategy within which local authority prepare development plans and Local Transport Plans (LTPs)

- sets out a broad development strategy for the period to 2016 and beyond

- provides the spatial framework for other strategies and programmes.

Regional Government Office are responsible for reading all draft plans on behalf of the Secretary of State, provide feedback to local planning authorities and, if necessary make 'formal objections' where plans appear not to have taken proper regard of national or regional planning guidance.

3.2.3. Local authorities

Each local planning authority - usually the local council - must produce a development plan for its area. This sets out the council's policies and proposals for how land is used and developed within its area over a period of up to 10 years. Decisions on planning applications and appeals must be made in line with the development plan, unless there are very good reasons to do otherwise. Councils must have plans in place for whole of their area. Plans should be reviewed every five years and changed when necessary to keep them up to date.

The Development Plan comprises several documents:

- **Structure Plans** - prepared by the Structure Planning Authorities (where existing, see table 1; otherwise prepared by local authorities) setting out key, strategic policies for the area(s) as a framework for local planning;

- **Local plans** - prepared by local planning authorities setting out more detailed policies to guide development in their areas, including proposals for specific sites;

- Minerals and Waste Local Plans setting out the land use policies for managing minerals and waste in their areas.

In the Avon area before institutional reform the county of Avon Structure Plan was originally approved in 1985. Alterations to the Plan changed some of the policies and rolled the Plan forward, so that the Third Alteration, approved in 1994, covered the period to 2001.

With the abolition of Avon County Council in 1996, the four new unitary local authorities became responsible for structure plan preparation. In line with Government advice they agreed to work together to prepare a new plan for the area. A Joint Committee for Strategic Planning and Transportation was set up, comprising members of the four authorities, and supported by a Joint Unit (JSPTU).

The Unit and Committee are responsible for the drawing up and adoption of the Joint Replacement Structure Plan that will provide policy guidance for land use and transport planning decisions from 2001 to 2011.

All Local Plans within this area are at present under revision in order to conform to provisions in the Joint Replacement Structure Plan for the Avon Area.

Local Authorities are also in charge of designing the Local Transport Plans, which have replaced the Transport Policies and Programme (TPP) system of bidding for capital resources. LTPs are strategy documents and do not require comprehensive coverage of individual schemes. They cover all forms of transport, including those that are provided by the public and private sectors and by communities. Its central theme is one of partnership and making best use of existing and future resources in a sustainable way.

Local Transport Plans also contain a bid for Government funds. The effectiveness of the strategy is dependent to some extent upon the success of this bid. Government funds,

together with funds from the Councils and other partners, will enable the transport improvements outlined in the Local Transport Plans to be taken forward.

PLANNING POLICIES AND TOOLS			
	Guidance	Documents with strategic value	Documents with regulative value
National level	Planning Policy Guidance		
Regional Level (Government Office for the South West)	Regional Planning Guidance (RPG10)		
County level (Formerly Avon county. Currently represented by the Joint Committee for Strategic Planning and Transportation		Structure Plan (Joint Replacement Structure Plan)	
District level (4 unitary authorities)			Local Plans Local Transport Plans

Table 5: Synthesis of the Bristol Area statutory planning tools

4.   SYNTHESIS OF THE INTERVIEWS

4.1. The spatial and functional structure of the Bristol region

The main watershed in the recent history of the Bristol subregion can be identified in the decision taken in the late 60s and early 70s by national government authorities to partly dismiss the northern portion of the Bristol greenbelt and build two motorways: the M4, connecting London to the south of Wales (via the north of Bristol) and the M5 that connects Cornwall with the West Midlands and crosses the M4 at the north of Bristol. In order to counterbalance the negative effects of the economic crisis in manufacturing industries in the former Avon County, the area surrounded by the two motorways and the north boundaries of the Bristol City District was then allocated for productive sites and residential developments. However once those decisions were taken, the economic system in the area changed from a manufacturing based industries to service and retailing activities the location of which has been further facilitated by a slacker legislation on land use changes. The Town and Country Planning (Use Classes) Order 1987, in fact removed the statutory duty to submit a planning application for a limited range of land use classes changes, among which the change from industrial to business uses responsible for the emergence of the business parks in the area.

The advent of the deregulation approach in planning and the presence in the districts surrounding the city of Bristol of local governments which were keen to capture as much economic and residential development as possible (South Gloucestershire and North Somerset) have favoured market and private actors and a form of uncontrolled and unplanned growth in the north areas. On the other hand other local authorities (Bath and Northeast Somerset) were and have until now remained averse to promote any further growth of their urban areas.

The planning system and the public decisions have played a dominant role in setting the conditions for the spatial and functional development patterns in the area and for the subsequent imbalances of such patterns.

4.1.1. Disparities in the spatial and functional patterns

The economic crisis affected the whole area but it is mainly in the North Fringe and in the Bristol City Centre that new development took place. Industries from the south east of England, strangled by the harshening congestion problems there, have relocated in the North Fringe since the late 1970s (TLC companies, Ministry of Defence) attracted by lower costs and higher accessibility levels. Since the 1980s the centre of Bristol has seen a boom in office development dominated by the financial and business sector and supported by a significant scheme of former industrial land within the city centre.

Disparities in the spatial and functional structure have taken the form of the above-mentioned difference between the North Fringe and the dismissed southern area, but also of disparities in development patterns between some city centres and the rest of the districts' areas. This is the case of the North Somerset district whose main urban centre, Weston-Super-Mare, has significantly suffered the increase in residential development which has mainly taken place in the northern part of the district located in the proximity of the Bristol urban area and therefore more attractive and accessible for both Bristol citizen in search of a suburban location and for new population which relocated in the area thanks to its office development.

For many years the strong development of the North Fringe has prevented many opportunities to take place in the city centre. One example is the Cribbs Causeway shopping centre, which has impoverished an already rather poor retail market in the city. Bristol

probably has the smallest city centre for its urban area in England, however interviews analysis confirms that such slow pace of development is rapidly changing and the city centre has become the target of several regeneration schemes. This is due, as described in the section on the impacts of this development pattern, to the growing congestion in the North Fringe area which has become less attractive for office and business location in the last five years.

4.1.2. Commuting patterns

Given all that has been said above, the Bristol region can be described as highly polarised. However it is mainly a bipolar structure with regards to employment and a more polynucleated one when considering population distribution. This is confirmed by the unusually complicated commuting and mobility patterns, which are difficult to deal with via public transport. Indeed the area, both at the regional and at the local level, has always had an inadequate public transport system, which has not been able to keep pace with the ongoing development.

Home to work commuting within the subregion is determined by the presence of the two main employment areas (Bristol City and the North Fringe) and the scattered nature of residential centres. Even though the North Fringe is also a housing development merely one third of the population living there is also working there. The rest is not only coming from Bristol but from a much wider area. The net inflow of workers for the region has in fact grown from 3,000 workers in 1971 to 16,000 in 1991 with estimates of 25,000 for 2001.

Whereas the Bristol city centre can more easily be reached by public transport thanks to the recently adopted congestion relief schemes (traffic management and Park&Ride), the North Fringe can only be accessed by car. Moreover in the area the levels of car ownership and especially of car usage are higher than in the rest of the Bristol region. As a result one of the main problems is the high level of congestion at peak hours on the motorways, and especially on the M32 branch, which connects the centre of Bristol with the east side of the North Fringe, and on the M5 connecting the southeast with the northeast of the subregion.

Another problem arises from the poor reputation of the public secondary schools in Bristol which generates a high amount of home to school commuting towards school outside the area, especially towards bath and the east of Bristol.

Finally due to the inadequacy of the retail market in the Bristol city centre, traffic problems can be found at weekends on routes towards the main commercial centres in the North Fringe.

4.1.3. Housing developments

Housing development in the North Fringe has been, since the late 1970s solely dealt with by the private market. As a result the planning was very poor and uncoordinated. The local services were kept to a minimum and more recent attempts to balance the poor service supply in the area have to fight against the resilience of the housing market as well as the buoyancy of the main shopping centres.

The housing typologies and quality of the built environment mainly align to those of the typical suburbs or edge city: low density development of standard speculative semi-detached housing. There is no sense place, it is impossible to walk anywhere and there is no public transport system. However this development has been extremely successful. Originally early residents complained about the lack of investments in services and public facilities but now it

has become the most popular and preferred residential environment dominated by young owner, occupiers, childless couples and young families.

As for the retailing sector, the success of the area has partially prevented secondary urban centres such as Weston-Super-Mare to capture the "positive" side effects of the economic development of the region.

Figure 13: The housing/office development along the M4 motorway

4.2. Urban Sprawl

Most of the interviewees have identified urban sprawl with the mentioned housing and office development in the North Fringe, mainly due to its physical and functional characteristics rather than to its spatial distribution. Sprawl is described as the form of development resulting from lack of coordination between public planning authorities and from a land and housing market, which is mainly, led by the private actor. This point of view is responsible for the decision to adopt a strategic and coordinated structure plan under the supervision of the Joint Strategic Planning and Transportation Unit.

However it is also shared opinion by part of the local authorities' representatives and by economic experts that sprawl is one of the unavoidable side effects of the economic development of the area, the message from this perspective being mainly that if the area wishes to keep the current pace of growth little or no restrains should be put to the supply of land for office and housing development and that the Bristol region should learn to cope with the necessary disadvantages.

4.3. Impacts

The impacts that the development of the North Fringe has had so far on the spatial and functional patterns of the subregion have been mainly described in the above sections. To summarise:

- A polycentric but unbalanced (especially along the south-north axis) functional pattern, which has generated a continuing congestion along the main transport infrastructures connecting the North Fringe with the rest of the subregion. At the same time the complicated pattern of mobility has hampered the development of a strong public transport system.

- Reduced possibility for the urban centres in the region to promote economic and housing developments. Bristol in the first place, and Weston-Super-Mare and Norton Radstock as well, have suffered form difficulties in attracting employment. Until recently regeneration schemes for the central areas have been hardly successful.

- Areas of deprivation, exclusion and social security deficits. South Bristol has some of the highest concentrations of long-term unemployment and social deprivation in the region. Besides several secondary centres are much in need for social and economic regeneration polices.

4.4. Plans and policies for the future of the Bristol region

In the last five, six years two major changes have influenced the vision on the future development of the subregion and the design of local strategic and structural policies.

1. The institutional reform of local authorities, which has abolished the former Avon County and established four new district councils responsible, among other functions, for local development planning.

2. The growing concern and dissatisfaction of the central government for the local authorities planning activity and on their poor effectiveness in addressing local development and social needs. According to this concern the planning system was structured around a more hierarchical system and regional policies, in the form of Regional Planning Guidance were introduced. The national government also advised that, wherever possible, structure plans be design jointly by the involved local authorities.

3. The eventual coming to light of the disadvantages, for the subregion as a whole and for the individual districts, due to the negative impacts of the current development trends all focused around the North Fringe of Bristol. In the awakening of the sustainability debate at the national and local levels, local authorities have expressed concern and even alarm by the pace and form of development in their own areas.

4.4.1. The Joint Replacement Structure Plan

The first result of these events, which have modified the structure and contents of planning, has been the decision to appoint a Joint Committee formed by the four district authorities responsible for the drawing up of the Replacement Structure Plan that will substitute the existing Avon Structure Plan.

The main purpose of the Joint Replacement Structure Plan, which will be in force until 2011, is to change the direction towards a more geographically balanced and socially and environmentally sustainable development, by reducing the pressure on the North Fringe and multiplication of the choices of employment, residential and commercial sites as an alternative to the bipolar structure of the North Fringe and Bristol City centre.

The structure plan is mainly a strategic document and promotes its aims through the following:

- A locational strategy, which seeks to concentrate development within or adjoining existing urban areas; to encourage high density and more mixed uses to locate where there is good accessibility to strategic public transport routes;

- Policies for development, which aim at securing a supply of employment land of a scale, distribution and quality required for an efficient economy, promoting spatial patterns of employment that minimise the need to travel and maximises the opportunities to use alternatives to the private car and fostering, wherever possible the redevelopment of brownfields keeping the use of greenfield areas to a minimum.

- Policies for housing aimed at increasing housing densities and promoting housing typologies more suitable and affordable to smaller households;

- Policies for shopping and town centres, which again seek to regenerate the central areas of the main centre of Bristol and at the same time, support the development of secondary centres.

- A transport strategy, which seeks to encourage alternative modes of transport to the car, to discourage car use where appropriate alternatives are available, and to integrate transport with urban regeneration and planned development.

The structure plan therefore designs a more balanced and better-linked polycentric structure of the region. However it has been the opinion of the interviewees that a more implicit goal of the Structure Plan is to act as the institutional place for transport and land use planning coordination and agreement among the district authorities involved. In fact, however sensible the policies of the Structure Plan may be, they will have to face the positions and oppositions of the local authorities who are eventually the local actors responsible for the implementation of local development plans. The *local* tradition of market led development on greenfields' areas supplied by public authorities searching for possibility to limit the damage of the economic crisis cannot easily be changed through strategic guidelines that restrain new development on open land to a minimum while trying to enforce brownfields' redevelopment strategies. Current development trends, whose roots are in planning decisions taken decades ago, seem difficult to redirect.

4.4.2. The Local Plans

At the time of the interview with the representative for the Bristol City Council the local plan was under revision. New problems have emerged in Bristol in the recent years, which have required changes in the planning policies and decisions for the city. The main changes have focused on the strengthening of the regeneration and redevelopment schemes for the city centre (Temple Quays, Old Carriage Brewery, docklands area). These projects have been made possible by the increasing congested conditions in the North Fringe, which have pushed private economic actors to look for more suitable locations in the city centre. The Bristol local plan also allocates housing development and regeneration schemes in South Bristol, not only as a tool to support a more balanced development of the city but also because the local authority is the principal land owner in that area and has an interest in promoting profitable developments.

Local plans in the other districts were also either under revision or had been recently reviewed. The interviews, rather than the analysis of the plans themselves have revealed the strategic approaches adopted by the different districts.

Bath and Northeast Somerset district proved reluctant to accept any further growth of the Bath urban area. This is partly due to the city being a World Heritage Site and willing to protect as much as possible its greenbelt. Such policy is embraced also in the Structure Plan, which provides only for redevelopment of brownfields for the area.

The North Somerset district is currently in a situation of slowly increasing unemployment and slowly increasing population. However much of the economic future of the area does not depend on the local council's decisions but on a wider arena of actors that can influence a more balanced development of the whole Bristol area. This situation is at the origin of an underlying sense of impotence. Such balance should help redistribute benefits but also costs and disadvantages and this is something that the council is less willing to accept. The council together with the South West Regional Development Agency, private partners and representatives from business, education, health, local town, parish councils and the community, has recently launched a "visioning exercise" for the city whose aim is to reposition Weston over the next 20 years as a more attractive place to live, work and visit by providing more jobs, better shopping, improved leisure opportunities and a high quality environment.

South Gloucestershire is the only district in the area that doesn't comprise a principal urban centre. For this reason the former district of Northavon (see table 4) have been since the early 1980s keen to promote the development of the region by supplying employment sites and development land in the North Fringe area which however close connected, even in terms of built-up area, to the city of Bristol, was and still is part of another district authorities. The trends set by the local authorities have had negative impacts, which are still visible today and are mirrored in the main strategy of the South Gloucestershire Local Plan. This is the most recent plan of the Avon area, deposited in June 2002 and it conforms to the policies and strategic guidelines set in the Replacement Plan. The current local authorities is widely aware of the necessity to restrict development in the North Fringe, to allocate development mainly in the existing urban areas and to overcome the long-established shortage of essential physical and social infrastructure in the housing estates privately developed to match the pace of population growth.

4.4.3. Transport planning and policies

Accessibility has been one of the factors that have shaped until now the spatial and functional patterns of the region. Within a wider framework of strategies that range from reducing car usage and congestion to promoting alternative means of transport and designing a spatial distribution of activities that can effectively reduce the length of trips, higher accessibility remains today one of the main goals of the structure and the local plans. Accessibility is in fact the key factor for the success of the land use and spatial redistribution strategies that seek to design a more polycentric system for the Avon region and to promote the regeneration of less developed areas such as the South Bristol or the Avonmouth/Severnside area.

The structure plan in particular is tending away from major road schemes and leaving local authorities to provide infrastructure through Local Transport Plans' bids for funds and/or contributions from third parties. The plan focuses mainly of the development or improvement of light rail or rail&road based public transport networks and on the promotion of a package approach to transport measures that includes park&ride schemes, parking restrictions and design at selected locations (the "carrot and stick approach to parking), traffic management schemes, pedestrian and cycling routes improvements. Packaging of measures is also promoted for Local Transport Plans' bidding.

Specific highways schemes proposed for the period until 2011 include the completion of Stage 2 of the Avon Ring Road, which has been strongly opposed by local citizens' associations, the realisation of an M49 Junction through developer funding and the re-alignment of the A403 road to provide access to the developments at Avonmouth/Severnside (see Fig. 14).

Figure 14: Map of Bristol

4.5. A clash of strategies: the Light Rapid Transit

The key improvement to public transport in the Bristol urban area is a Light Rapid Transit (LRT) system. This links major residential areas in the North Fringe to the city centre. The first phase of the light rapid transit system is an important part of a transport strategy aimed at increasing the accessibility and attractiveness of the City Centre. In March 1997 a consortium was chosen to build, finance, operate and maintain the rapid transit system through a public/private sector arrangement. The proposal concentrated on a line from Bristol City Centre northwards to a Park and Ride terminus at Almondsbury also serving the new suburb at Bradley Stoke, South Gloucestershire. The LRT system was to be built in connection with a road-charging scheme in the Bristol City district in order to further promote the shift towards public transport., and with several park&ride location along the LRT route.

It is useful to remind that the LRT is a fundamental part of the Local Transport Plans and Local Plans of both the Bristol City and South Gloucestershire districts and that the projects needs to approved by national government and funded via private third parties. Therefore a complete agreement on the route of the LRT had to be found between the two involved local authorities. However, conflicts between them started to emerge on the routes and on the location of the LRT stations (see Fig. 15), as this would have significantly influenced traffic loads on the rest of the network accessing the LRT stations and land use and development planning in each of the two districts. It was only recently that the two authorities have found agreement (this actually happened after the round of interviews was completed), and only under the threat of: 1) losing funding for the entire project; 2) having to radically rethink and redesign the Local Transport Plans; 3) a possible action taken by the Bristol council, under

the Transport and Works Act, to overcome the authority of South Gloucestershire council and proceed with the LRT project without full agreement.

Bristol City Council and South Gloucestershire Council have now agreed to work together on the development of LRT for the North of Bristol of both a City Centre - Parkway and a City Centre - Cribbs Causeway line. What is viable is not yet known and depends upon the results of technical and economic model evaluations.

Two separate projects (if ready) will be submitted to the Government's evaluation and approval. It remains to be seen whether South Gloucestershire can meet the timescale but if it could it could well achieve its aim of getting to Cribbs Causeway in the first phase, albeit having caused a delay of a year to the scheme. If it does not meet the timescale it would mean that, providing the Bristol Section is approved, it will not only have delayed the project but will have to wait even longer for any major benefit to Bradley Stoke or Cribbs Causeway.
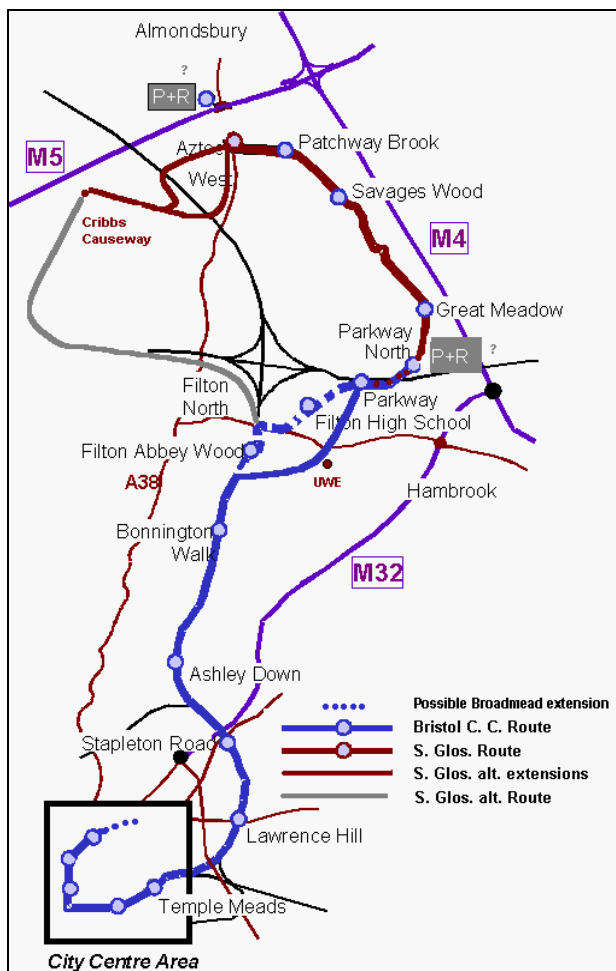

Figure 15: The Light Rapid Transit Plan

4.6. Conclusions

Under the common acknowledgment of the necessity to promote a more sustainable development for the Avon area, the Joint Unit and the four districts have all devised plans and policies that share this common vision. However such a shared vision has not prove a strong enough tool to overcome conflicts between the development's strategies of the involved planning authorities and of the economic actors.

Some district's authority can be recognized as successful in achieving their strategic and development goals within their own boundaries. The traffic management schemes for Bristol and Bath, the regeneration plans in Bristol are all success-stories in this sense. Other authorities, notably North Somerset, are trying to develop a new strategic vision for their own future. However when it comes to implement, rather than just formally share common activities, the entire systems shows some difficulties.

While the spatial and functional structure of the region appears to be resilient to most of the attempts to redirect its development trends, the actual rather than the institutional planning and decisional systems seem to be so complex that deviations (often due to conflicts among private and public actors, or institutional levels) from the provision set in the structure, local and transport plans might put at risk the achievement of the strategic goals.

Conflicts are often due to a lack of tradition and practice in coordinated planning, as is the case for the four districts councils but also to a sense of dissatisfaction the central government has with the local planning authorities: it consider them slow and incapable of meet the requests of economic development in the area.

The above-described case of the Light rapid Transit Scheme is not the only example. The central government has for long prevented the Joint Strategic Planning and Transportation Committee from depositing (and therefore adopting) the Structure Plan on a claim for a higher allocation of housing developments in the area.

The level of awareness among local authorities differs but in general urban sprawl by itself is not perceived as a problem but the side effect of economic development. The limited acknowledgment received by sprawl can also be referred to a shortsighted vision of long-term structural urban changes in the region and of their impacts. However keeping development at the current pace doesn't seem an option but rather an issue everybody agrees upon. Where, and how this economic growth has to occur, seems instead still the subject of disagreement.