Human Mobility In Functional Urban Regions: Understanding The Diversity Of Mobilities

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Abstract

This paper brings together three contrasting strands of conceptualization relating to human mobility in metropolitan regions. First, the well established literature on functional urban regions which focuses above all on the role of journey to work in defining these, and on patterns of relative population centralization versus decentralization in urban regions. Other than in terms of defining metropolitan zones, this literature is mostly based on analyses of ‘permanent’ population flows. Therefore, the second theme of this paper is a focus on the importance of various forms of temporary population movements which can either confirm or challenge the trajectories of centralization v decentralization that are suggested by permanent population shifts. These themes are explored through an empirical analysis of Portsmouth, UK, a mature metropolitan area which has been subject to absolute population centralization in recent years. Finally, we explore how diverse mobilities are interwoven – a process that can be understood in terms of Urry’s notions of scapes and flows, and also of enfolded mobilities.

Key words: mobility, centralization, metropolitan, scapes, temporality

Introduction

Cities increasingly are understood not in terms of structures but of flows so that Doreen Massey (1994: 154) has argued that:

‘All places are ‘a hybrid mixture of local and more widely stretched relationships. …. the question is the ways in which the stretching, articulation, and intersection of different social relations across time-space have changed, and how this reorganization of social relationships in time-space is altering people’s concrete experience of their world …. Need to understand places as made as ‘articulated moments in networks of social relations and understandings

Although there has been considerable research on individual flows – whether different forms of migration, journey to work, tourism and leisure etc. - there has been surprisingly little research which has sought to unravel the intersection between different types of flows and how they shape the modern city. These human mobilities are both autonomous and inter-related, sometimes being intimately connected and at other times seemingly disconnected. The interconnections are underpinned by the role of, what Urry (2000: 35) terms, scapes: ‘networks of machines, technologies, organisations, texts and actors that constitute various interconnected nodes along which the flows can be relayed. Such scapes reconfigure the dimensions of time and space’. Flows of various types move through these scapes and ‘generate for late twentieth-century people, new opportunities and desires, as well as new risks’ (Urry 2000: 36).

In this paper, we focus on one form of flows – that of human mobility – and explore these interconnections, and how they shape the modern city, through a UK case study, the
metropolitan area of Portsmouth. The paper considers three main themes: the first two relate to centralization-decentralization, and temporary mobilities, and consider both conceptual issues, and analyses of aggregate data. The third considers the ways in which flows are interconnected, and is more conceptual and speculative.

**Conceptual Framework**

Much of the literature on mobility and urban forms has focussed on longer term and, or more permanent, forms of movement such as migration. For example, the theory of mobility transition (Zelinsky 1983) deals with long term change, proposing an idealized stage model. As a country starts to experience low urban growth, initially this tends to be migration-driven. Eventually, it reaches a stage of maturity, with a high proportion of urban growth and natural change having become more important. This approach is criticized for the assumption that there is an inevitable trajectory that all countries will follow. Another well established strand of academic research concerns the dynamics of functional urban regions, in particular the shifting balances between centralizing and decentralizing flows, particularly of migration and journey to work mobilities, and the ways in which these are related to the changing social composition of different urban zones (for example, Spence et al 1982). This constitutes the starting point for the conceptualization of this paper.

**Functional Urban Regions**

There is an extensive literature on functional urban regions which dates back to Berry et al (1969). Their first and major contribution was to conceptualize the city not so much in terms of urban morphology (built-up area, densities etc) and structures but in terms of functional linkages – effectively in terms of flows of people. These were structured around the notion of a dominant core and a dependent ring, although the relationships between these has changed over time. Robson et al (2006: 1) provide an useful explanation of the concept of city regions:

> City-Regions are essentially functional definitions of the economic but also of the social ‘reach’ of cities. The aim in defining them is therefore to identify the boundaries of those areas in which a majority of the population see the core city as ‘their’ place – in which they may work, shop for certain types of goods, visit for entertainment and leisure pursuits, and with which they identify.

There will necessarily be ‘fuzziness and overlap at the boundaries of many City-Regions; and the degree of self-containment is likely to vary for different kinds of activity’ (Robson et al 2006: 1). In other words, the cores and rings are defined by different forms of flows and activities, which only partly overlap. Early researchers, however, paid little attention to the diversity of activities and flows. Instead, they focussed mostly on employment and population, and the most widely used definition is based on the Local Labour Market Area, that is on a single type of human mobility, the journey to work.

The travel to work area was intrinsic to the pioneering work of Berry et al (1969) in the USA and of Hall et al (1971) in the UK, followed by the work of Spence et al (1982). Hall and Hay (1982) and van der Berg et al (1982) were early attempts to extend these definitions to (western) Europe as a whole. Subsequently, the definitions of travel to work areas have been revised in many countries, as well as in European projects such as EPSON. The latter considered whether EU NUTS5 data could be used as equating to functional regions based on journey to work flows. It concluded that broadly equivalent data were available for several
EU member states – Italy, the UK, and Sweden, as well as ‘implicitly’ for Belgium (Antikainen 2005) – providing a selective basis for comparative studies.

Although there have been some mega comparative European studies of functional regions, research has largely been nationally centred. For example, in the UK there were several notable revisions in the 1980s (Office for National Statistics 1998; Coombes and Openshaw 1982; Coombes et al 1985) resulting in three key criteria for operationalising the functional region concept: a) minimum workforce size in the core; b) self-containment – a minimum proportion of all journeys to work should both originate and end in the region; c) only spatially contiguous areas should be included, while spatial outliers should be excluded. Later research attempted to combine commuting and migration data in the definition of functional regions (Coombes 2000). For Europe, probably the most useful comprehensive definitions of functional urban regions are to be found in the work of Cheshire and Hay (1989).

There are a number of challenging issues involved in defining functional regions based on travel to work flows. Robson (et al 2006) tested two competing models. The first is the exhaustive, non-nodal model. This is a bottom up approach based on setting minimum levels of journey to work, employment self-containment. It is an exhaustive approach which allocates all districts to a city region. The second is the non-exhaustive and nodal model, a top down approach. The cores of these regions are predefined nodes, and the key task is to identify areas that have minimum levels of journey to work flows linking them to these nodes, or cores. It is a non-exhaustive procedure, and not all areas of the country are necessarily allocated to a city region. In addition to the usual criteria of minimum employment levels in the cores, and journey to work flows, they added other criteria, such as being ‘significant urban areas’ or higher order retailing centres. These implicitly seek to incorporate other types of flows – to retailing, services, leisure activities, and events – but rarely explicitly measure such mobilities.

The main alternative to the journey to work approach has been an attempt to define functional urban regions in terms of housing market areas (Robson et al 2006). These are the areas where households search for houses to move to, without having to change jobs – that is, without having to move out of the labour market area. It assumes that there will be significant levels of such residential moves within functional regions, as opposed to across their boundaries, if they possess a critical employment mass, and operate as integrated functional regions. These definitions are operationalised in terms of either residential mobility (intra-urban migration flows), or strong covariance in house prices movements. Labour-market and housing-market approaches produce broadly similar outcomes, although housing market definitions are likely to produce larger city regions compared to labour market definitions.

In addition to these two main approaches, a number of other methods are available to identify functional regions. Economic activity-based definitions focus on a different type of flow - inter-firm business linkages, especially supply chain. Service based definitions define service areas hinterlands for shopping and other major services such as higher order hospitals, theatres and concert halls. Local administrative area definitions are based on the assumption that, because local authorities provide a range of services to residents, their boundaries demarcate city regions for some purposes. Finally, transport data can also be used as a proxy for journey to work, based on identifying the main suburban transport routes from urban cores to surrounding areas, and critical levels of passenger flows, as indicating significant journey to work linkages. Of course, such transport data do not only pertain to journey to work or labour market areas, but also incorporate many other forms of urban mobilities.
Indeed transport infrastructures and services constitute important scapes (Urry 2000) which shape flows within the city.

While journeys to work, to shop, to use public services are important in defining the extent and meaning of functional urban regions at a moment in time, they have mostly been used as relatively static definitions, and are of limited value in analysing the dynamics of the evolution of urban regions. For the latter, at least in terms of the mechanisms of change, the key focus is migration – not just within the metropolitan region, but also across its boundaries, recognizing their global interconnections.

One of the central concerns of the literature on functional urban regions, which originated with Berry et al (1969), has been to identify regularities in the phases or stages of urban development: characteristically these indicate a sequence whereby absolute and then relative centralisation are followed by relative and absolute decentralisation. There was considerable research within this tradition in the 1980s, when researchers sought empirical regularities in the patterns of centralization-decentralization within Europe (Hall and Hay 1980; van den Berg et al 1982). Migration was seen as the driving force behind population shifts, with migration in turn being shaped by both structural economic changes and life-cycle and life-styles changes. Both internal and international migration were considered to be key elements of urban dynamics, with international migration contributing to urban regeneration in inner urban areas, and to relative population (re)centralization – that is a stage beyond the classic four stage sequence.

Some of the earlier, and more simplistic, findings within this tradition have been challenged in later research, notably by Cheshire (1995) who confirms that, other than in the UK, there was relative centralisation across much of the European system of functional urban regions from the 1980s. Additionally, with the exception of Germany, there was no evidence in the 1980s and early 1990s that international migration was the driving force behind renewed or continued relative centralization. Arguing for the need to search for deeper and more complex explanations, Cheshire found evidence instead of cumulative causation, related to human capital and human capital mobilities in functional urban regions (FURs). In particular he concluded that functional urban regions ‘ with advantages in attracting skilled residents can cumulatively improve living conditions and experience recentralisation and growth, while FURs with fewer advantages may experience continuing decentralisation and decline’ (Cheshire 1995: 1058). Moreover, he contends that this is related to the shift from manufacturing to service employment, and the selective capacities of some cities to accumulate significant concentrations of higher order service jobs.

The City of Mobilities

Functional urban regions make an important contribution to urban research in shifting the focus from morphology and structures to flows of people. However, they focus mostly on labour market areas, thereby ignoring large arenas of urban life, and indeed all the activities of those who are not formally engaged in the labour market. They also tend to see functional urban regions as bounded, that is focusing on internal movements within a relatively self contained urban region. This clearly fails to recognize the significant shifts which have occurred in human mobility in recent decades. As Amin and Thrift (2002) argue: the modern city is unprecedentedly based on mobility which is increasing over time. One important aspect of this is the globalization of mobility, or 'globility' (Montanari 2002), with cities
needing to be understood as globally situated, whether in respect of tourism, labour migration, student migration or long distance journeys to work.

It is useful – at least in theoretical terms – to turn to the writings about the nature of place, a theme that human geographers have written extensively about. In essence, this means that we should understand places in non-territorial terms (Amin 2002). Doreen Massey (1994: 154) captured this elegantly in the quotation at the start of this paper. She understands places as ‘a hybrid mixture of local and more widely stretched relationships’, which includes mobilities of different forms at different scales, including the global. Moreover, places are also constituted as ‘articulated moments in networks of social relations and understandings’. We seek to build on one strand of this within the paper, the understanding of how different flows are articulated, and intersect, in the city. Katz (2001: 1228) extends this idea arguing that places should not be seen as unique or self-contained. Instead, she calls for a relational approach to globalization that “situates places in their broader context and in relation to other geographic scales, offering a means of understanding structure and process’.

The articulated moments in relationships which effectively constitute places, include different types of mobilities – of individual movements across space (also referred to as bodily or corporeal mobility), as well as virtual movements via ITC: ‘places now can be seen as the embodiment of virtual or immanent forces, and as the temporary spatiotemporalisation of associational networks of different length and duration’ (Amin 2002: 391). Despite the growth of virtual travel via the internet, there is no convincing evidence that this is replacing corporeal travel (Urry 2007) and the latter continue to constitute an important dimension of the spatiotemporalisation that is referred to by Amin. This paper focuses only on corporeal mobility, hereafter referred to as human mobility.

Urry (2007: 10-11) identifies 12 main forms of mobility: asylum, refugee and homeless travel; business and professional travel; discovery travel including students and au pairs; medical travel; military travel; post employment travel; trailing travel of children and other dependents; diasporic travel; travel of service workers including slaves; tourist travel; visiting friends and relatives; and work related travel. This categorization is necessarily arbitrary, and indeed was meant to be illustrative, than analytical, but nevertheless does capture the range of mobilities.

These mobilities can be conceptualized in many different ways, and Figure 1 illustrates some of these. Figure 1a, drawing on the work of Bell and Ward (2000), suggests a classification based on duration of stay away from home and spatial scale – which, of course are inter-related. The idealized locations of four types of mobilities related to shopping, commuting, long-distance commuting and migration are shown in relation to this scheme. There have also been change over time in the relative importance of different types of mobilities, and Figure 1b suggests an idealized view of these differential growth rates. Taken together these help us to visualize how the city is constituted of shifting mobilities.

**INSERT FIGURE 1 HERE**

**Inter-related Mobilities and Urban Conflicts**

The different mobilities outlined above are necessarily interlinked in three ways. First, the mobilities of individuals are linked because they are based on networks which ‘produce complex and enduring connections across space and through time between people and things’ (Urry, 2000: 34). These enduring connections connect individuals and places through multiple mobilities – for example, colleagues at work become friends that you socialize with, go shopping with, or go to the cinema with, and their spatiotemporalisation (Amin 2002) is
usually defined by the journeys to work of the participants. These constitute ‘enfolded mobilities’ (Williams 2009) which are also based on ‘contingent mobilities’ in the sense that some mobilities are a consequence of, or dependent on, other mobilities. For example, accompanying persons (family, or employees) who travel with the lead, decision-making migrant. Alternatively, earlier migration – say as a student – may influence later life migration, because of the way it shapes search spaces and tacit knowledge. Williams (2009) identifies five main types of enfolded mobilities: discovery mobility, accompanying mobility, servicing mobility, visiting friends and relations mobility, and post-work mobility. Although not comprehensive, and essentially concerned with longer term migrations, these provide insights into mobilities are inter-related, and also focus analysis from the individual to the group.

Secondly, another form of inter-related mobilities involves the multiple and contingent mobilities of individual actors. Hence, specific individual mobilities may be conditional on other forms of mobilities: for example, because an individual travels to work from the outer city to the city centre, then he or she may also do their shopping or attend a film performance after work in the city centre. These contingent mobilities can be understood in their more abstract form in terms of time-space geographies (May and Thrift 2001), but they can also be understood in terms of individual resources, tacit knowledge of the city and search spaces.

Thirdly, mobilities are also interwoven because flows are shaped by scapes (Urry 2000). Scapes are the technologies, organizations, infrastructures, and prevalent discourses which together ‘reconfigure the dimensions of time and space’ (p.35). It is this reconfiguration which creates scapes in a landscape of mobilities and flows of people, information, finance, and images move along these scapes. Cities are deeply structured by ‘scapes’ – by motorways, scheduled flight routes, airports, bus and ferry routes, train lines, networks, and various forms of organizations - which shape human mobilities and tend ‘to wall them in’ (Urry 2000: 38). Moreover, scapes tend to ‘wall in’ not single but multiple flows. For example, the schedule airline routes which shape tourism flows also shape long distance commuting. And the bus routes which carry commuters by day, transport leisure seekers in the evening. Similarly other element of these scapes – nodes such as hotels – host and channel different types of mobilities at different times the week and the year: for example, business travellers in the week, and leisure travellers at the weekend. The differential pricing of these hotel rooms and of off peak travel fares reinforces the partly differentiated use of scapes by different users at different times.

While no particular form of mobility has a claim to primacy, or being the most important type, migration does have fundamental consequences for other mobilities. Cities are shaped by migrations, of various duration, whether these originate from within the city, the surrounding region, the same country or globally. This generates tensions between newcomers and long term residents, between outsiders and insiders, and contributes to the already deep social and spatial divisions that characterize cities. For example, Sassen (1991) has argued that, at least in the global cities in the more developed world, globalization of mobility is leading to polarization. On the one hand, there are the highly paid and skilled groups working in tradable activities such as finance and business services. But they also require a range of urban services, characterized by relatively low paid jobs; given high land and house prices, there are relatively few indigenous workers able or willing to take these jobs, so that instead there is a dual labour migration system. Large numbers of migrant workers are required to provide the services that are demanded by the highly paid residents, many of whom are themselves migrants. Hence, Cheshire’s (1995) emphasis on the role of human capital, particularly highly skilled workers, can be extended to incorporate associated
migrations, which in combination contribute to the reshaping of the divided spaces in the modern city.

More generally, as Marcuse and van Kempen (2000:3) note:

‘There is a new spatial order of cities, commencing somewhere in the 1970s, in a period often described as one of a globalizing economy. While cities have always been divided along lines of culture, function and status, the pattern today is a new, and in many ways deeper-going combination of these divisions. Although it varies substantially from city to city by historical development of the built form, by national political and economic structures, by the weight of the contending forces involved in development, by the role of ‘race’ and ethnicity, and by the place in the international economy, nevertheless there are basic features in common. They include a spatial concentration within cities of a new urban poverty on the one hand, and of specialized ‘high level’ internationally connected business activities on the other, with increasing spatial divisions not only between each of them but also among segments of the ‘middle class’ in between.

However, cities are not only constituted of divided spaces – a somewhat static view – but they are also constituted of shifting and polarizing mobilities. These mobilities may have different temporalities but they often overlap, as between tourists and commuters, or theatre goers and clubbers. They compete not only in terms of the use of transport and spaces, but also in terms of the norms of behaviour that are expected in these. The city can be understood as a series of arenas where social changes and conflicts resulting from human mobility are played out, exacerbated or ameliorated, if not resolved. Market forces and state intervention manage these mobility conflicts – to some extent. For example, transport planners and companies may use differential prices to relieve pressure on transport circuits at peak travel to work times. Or there may be an attempt to use zoning powers to segregate late night activities such as clubbing and pubs.

Both structural and mobilities conflicts often overlap. For example, conflicts can result from the gentrification of the cores, perhaps through the regeneration of waterfronts with investments in land reclamation, up-market housing, offices, services, festival marketplaces, conference facilities, tourism attractions that have created new landscapes of consumption (Zukin 1991; 1995). Such waterfront zones are privileged zones compared to other abandoned industrial areas because they have access to transport links, to the central business area, and to valued waterfronts. As a result of public policy to regenerate these areas, and market mechanisms in terms of house prices, a process of gentrification may occur – leading to polarized social structures, and conflicts over housing and urban spaces between different social groups, differentiated particularly by income and life cycle stage. Migration, at different scales, is a key mechanism through which these changes and conflicts are enacted. But these zones also become the focus of other types of mobilities, with their services and tourist attractions drawing tourists, leisure participants and other temporary visitors at different times of the day, week, and year.

Another illustration is provided by out migration from the cores to the surrounding metropolitan zones, a mobility that is not class or age or ethnicity neutral. These population flows are highly polarized, and contribute to another dimension of social polarization within cities. One manifestation of this – which is particularly marked in the USA, but also exists in other countries - is the emergence of the edge city (Garreau 1991) following the deconcentration of higher order businesses, people and services from the cores. Depending on
how self contained these urban nodes are in the outer city, there are resultant flows of population back to the urban cores for jobs and services. But the outer city shopping centres and leisure complexes also attract visitors from inner urban areas, as well as from beyond the metropolitan regions.

These, and other changes and conflicts, contribute to a long standing debate about the organization and planning of urban spaces (Vilhelmsen 2007). They focus on ideas such as compact cities and urban containment strategies (van der Waals 2000; Breheny 1995). These policy debates are explicit recognition of the links between urban form and people’s activities in time and space (Newman and Kenworthy 1991), in other words of the pivotal role of human mobility.

**Case Study: Portsmouth**

**Portsmouth: a Changing Metropolitan Area**

An analysis of urban structures and mobilities in the UK metropolitan area of Portsmouth was undertaken as part of an FP7 project, SECOA, an eight country study of 17 coastal metropolitan regions (see http://www.projectsecoa.eu/). The metropolitan region, and its two principal zones – core and metropolitan ring - were defined with reference to the destination of commuting inflows, using lower super output statistical data (LSOA), that is small area statistics. The core of Portsmouth was defined in terms of the local authority area of Portsmouth, and captures a high density concentration of employment with a substantial journey to work hinterland. The core is a compact urban region which occupies a highly constrained physical site and, in consequence, has very high population densities by UK standards.

The ring was defined via an enhancement of a recommended methodology set out by the UK Government for mapping city regions. This required the identification of all local authority districts having 25%+ of their external commuters (that is, working outside the local authority) travelling to the pre-designated Portsmouth core. This has been determined by examining 2001 Census commuting data at two scales: local authority districts (using a threshold of 25% of each area’s external journeys), and LSOAs (using Commuting Zones built up from these small statistical areas). A number of important transport routes contribute to defining the extent of the ring, most notably the east-west motorway that borders the northern edge of the core of Portsmouth.

Historically, Portsmouth’s development has been driven by its port functions. Construction of the first docks started in 1212, and it has been an important naval port for many centuries. The port is still the focus of present day economic activity, including shipbuilding, the commercial port and waterfront regeneration related to retailing, leisure and tourism. These constitute important foci of mobility both for work and leisure purposes.

The population of the core had been in long term decline in much of the second half of the twentieth century, but reversed in the 1990s, and grew from 188,800 in 1999 to an estimated 203,503 in 2009, an increase of 7.78% (Table 1). In contrast, the population of the ring fell slightly in this decade from 344,539 to 341,698, that is by -4.27%. The metropolitan region has therefore experienced absolute centralization in the last decade. As noted earlier, this is an unusual feature for a mature urban region in Northern Europe: much of Europe has experienced relative not absolute centralization (Cheshire 1995). There are a number of
reasons for this reversal including urban regeneration in the core and continuing constraints on residential development in much of the ring, as well as population increase from natural change and particularly from migration. Between 2003 and 2009 the population in the core increased by 10,700, of which 9,900 was accounted for by net inward migration. Furthermore, reinforcing the importance of situating metropolitan regions in global context, some 12,000 international migrants arrived in Portsmouth during this period while there was a loss of 2,100 migrants to elsewhere in the UK (ONS Local Area Migration Indicators – Population Estimation Unit Components of Change Data 2010).

TABLE 1 HERE

‘Permanent’ Mobility: International and Internal Migration

There is overall balance between annual internal (originating in the UK) in- and out-migration in all zones in the metropolitan region (Table 2). In 1999 there was a marginal increase in population in the ring as a result of migration, with slightly higher losses from both the core and coastal zone. This pattern is indicative of the general outward movement of population from city centres across the UK in the 1990s. However the small scale of the movement indicates the weaker later stages of this decentralization. By 2009 there were lower levels of in-migration into, and out-migration from, the ring; however, overall annual net migration into the ring was slightly higher compared to 1999. The core experienced higher absolute levels of both in-migration and out-migration compared to 1999 indicating increased mobility and population churn. In 2009 there was also positive net migration in all zones which may indicate the general resurgence of city living which characterised a number of UK cities in the 2000s. So although the differences between the absolute levels of net migration to the ring and core were modest in 1999 and 2009, their relative significance in 2009 (0.19% of ring’s population as compared to 0.34% of the core’s population) indicates greater impact on the core. The relative impact of population churn induced by internal migration is also greater in the core than the ring.

TABLE 2 HERE

In contrast, international migration has been a major driver of urban change. It has been at lower absolute levels in terms of both in- and out-migration but its net migration contribution has been more substantial than that of internal migration (Table 3). There are two main features to note. First, the core has attracted more international migrants than the ring, in both 2003 and 2009, and the differential was particularly strong in 2003: 5,300 versus 488 inwards international migrants in the two zones respectively. Secondly, with the exception of the ring in 2003, international in-migration has been greater than international outmigration in both zones. The scale of net international immigration – taking into account that these data are for single years – suggests that this is a major component of population change in all the zones, but especially the core, accounting for all of the net population gain in this zone between 2003 and 2009. Over these six years, net international migration into the core was 12,000, while the ring lost 1,255 international migrants. The mechanics of urban change have become strongly internationalised.

TABLE 3 HERE

Turning from these aggregate flow data, to the distribution of inter-zonal flows, there is inevitably a more complex picture. In 2002/3, in terms of absolute inwards flows, the largest group of migrants were not international but from other English local authorities outside of the metropolitan region. The ring also attracted more internal migrants from the core as
opposed to the reverse flow, suggesting that migration within the metropolitan area contributes to local decentralization of population. However, there were other processes in play leading to the absolute centralization of population observed over a slightly different time frame. In 2009, there is a similar pattern. The largest groups of in migrants in the ring and the core were from other parts of England from outside the metropolitan area. The number of in migrants from the core to the ring also continued to outnumber the reverse flow, although the difference had been reduced to less than a hundred people. The same broad pattern was evident in the ring.

Turning to the net migration of migrants from elsewhere in England, and particularly the changes between zones, the pattern is again different (Figures 2 and 3). Although inward migration from outside the metropolitan area is the single largest component of population change in the core and the ring, this is matched by a broadly similar level of outmigration between these areas in both 2002/3 and 2009. Therefore, in terms of the overall net contribution to population change, the main dynamic force is international not intra-national migration. There is also confirmation that migration is a key element in the decentralization of the local population from core to ring – although this is counterbalanced by the significantly greater population gains in the core from international migration, leading to overall absolute centralization of population in Portsmouth metropolitan region.

FIGURES 2 AND 3 HERE

Migration makes a substantial contribution to the changing social composition of the population, but it is difficult to assess this accurately given data constraints, other than in respect of age. This is illustrated here in respect of internal immigration from elsewhere in the UK only, and it should be noted that these data are estimates. In 2009, they suggest that, as would be expected, the internal in-migrants to the core were mostly of working age, with 73.9% being aged 16-65; in other words, this was largely driven by labour migration and student migration. In contrast, there were relatively fewer young adult internal migrants in the ring, and relatively more children as well as a small number of older migrants. This suggests that the ring – as would be expected – is not only attractive to labour migrants, but also to families and to a small but important element of retirement migration. This broadly conforms to the cycle of urban migration, with the core being the destination of younger migrants, and the ring for families.

TABLE 4 HERE

A Hub of Temporary Mobilities

Although Amin and Thrift (2002) argue that the modern city is unprecedentedly based on high levels of mobility which, moreover, are increasing over time, there is relatively poor secondary data available on temporary mobilities. The analysis presented here is therefore mainly limited to commuting, second homes and – with very constrained data – students and tourism. These have distinctive geographies and temporalities, shaping the shifting intensities of human activity in each zone.

Commuting, or travel to work, is probably the single most important form of sustained temporary mobility in most cities. There are two main features of commuting in Portsmouth (Table 5). First, in both the core and the ring, the largest commuting flows are within each zone, illustrating the relatively widespread distribution of jobs. Secondly, there are also important flows between zones, and it is particularly notable that the ring to core flow is
approximately twice as large as the core to ring flows, emphasising the continuing concentration of employment in the city of Portsmouth.

**TABLE 5 HERE**

Second homes are not very important in the Portsmouth metropolitan area, but there were 1,327 in 2001, rising to 1,763 in 2007 (Table 6). Approximately three quarters were concentrated in the core in 2001, but the numbers were broadly equal in the core and the ring in 2007. There is no obvious explanation of this significant shift in such a short time period although possible contributory factors may be second homes used by student family members or bought for letting. Both trends were fuelled nationally during the mid 2000s by the expansion of student numbers and the relative ease of accessing mortgage finance. They may also indicate a growing tendency for individuals to have peripatetic lifestyles, living and working in more than one location. Although not very large in absolute terms, these data do signify an element of transitory second home owners, who exert a temporally uneven demand on urban resources.

**TABLE 6 HERE**

Portsmouth is also home to a university with substantial numbers of students as well as other post-secondary school educational institutions that are distributed across the metropolitan area. However, the core is the main focus of universities and colleges. It is estimated that there were 11,627 students in the core in 2001 whose main (family) home was outside this area, and a further 5,513 in the ring. By 2010, according to a Student Mobility survey undertaken by Portsmouth University, the number in the core had increased to 15,470, and that in the ring had fallen to 2317. The temporality of student migration is determined by the dates of terms and semesters, as well as by the lengths of courses (varying between one and four years, but predominantly three years in universities). They represent a continuous migrant presence for about 30-40 weeks each year.

Sub-regional tourism statistics in the UK are notoriously poor in quality, and data at the level of the case study zones are only available for 2009. These indicate that the average number of day and tourist visits to the core (3,532) were twice as large as in the ring (1,800). These figures are broadly consistent with the known concentration of tourism attractions both within the city and in the waterfront zone, being associated with both historic themes and the regeneration of the waterfront for leisure, retailing and residential purposes. Portsmouth also has an important night economy focussed on the waterfront zones and city centres, with its restaurants, clubs and bars attracting large numbers of both local and out of area visitors. Unfortunately no data are available on this important set of mobilities.

Given its port and large natural harbour, Portsmouth is also the focus of considerable sea-borne tourism. Data is available only on the number of pleasure boats in marinas in the coastal zone (715) and the peak number of cruise ship passengers arriving in the coastal zone in any one day (1,142). These have very different impacts on the coastal zone within the core of the city. Boats moored in the marinas are usually a source of repeat visits throughout the year, particularly in the summer, of various durations, including an important weekend element. The impacts are highly concentrated. In contrast, while not a major cruise liner destination, Portsmouth is an important ferry terminal and the city can receive substantial numbers of ferry passengers and visitors on particular days. While cruise ship passenger activities are mostly concentrated in the coastal zone, a proportion are taken on bus tours to other destinations, disseminating their impact beyond the core, and even beyond the metropolitan area.
Table 7 brings together, in a comparative framework, the relative importance of different forms of mobilities, although data is only selectively available. We focus on the coastal zone within the core, where the competing mobilities are most intensely articulated. This is defined on the basis of small statistical areas which are contiguous with a 100 metre high tide buffer zone, and effectively includes a large part of the core. Given that these data have been collected by a range of bodies, and rarely on a consistent basis, care is necessary when comparing them.

**TABLE 7 HERE**

There are two points to emphasise. First, that population change in the coast is modest but is equivalent to an annual increase of 0.5%: we have noted earlier that this is driven by net migration, and especially by net international migration in the core. Net migration (internal and international) represents an annual increase equivalent to 0.3% of the total population in this period.

Secondly, compared to the slow growth of total population through ‘permanent’ mobility, that is migration, there are far larger short term additions to the population of the area through temporary mobilities. Each of these has distinctive temporalities. The largest influx is of commuters from outside the zone who add about one third to the population on a regular basis, although this is far less on weekends than on weekdays. Students add a further 4.5% to the population, and they are present for 30-40 weeks a year, the rhythm of their arrivals and departures being driven by academic teaching dates. Leisure visitors can be equivalent to a further 7.7% of the population, at peak times, although their mobilities are very different to each other. Second home owners are a mixed group of both leisure and work orientated temporary residents, with the leisure motivated coming for occasional short visits of a few days or a week or two. Visitors, cruise ship passengers and passengers and crews on boats in the marina can add up to a further 5.7% to the population. Visitors, tend to concentrate around the ferry port and waterfront, where most tourist attractions are found: a proportion stay for a few nights (typically short break urban tourism), or are day visitors who spend a few hours in the city. Cruise ship passengers are highly concentrated spatially, entering the city at a single point, and temporally, being determined by the morning arrival and evening departure of their cruise ship; those using boats in the marinas resemble second home owners in many ways, with weekend use being common.

Taken together, if their peak numbers coincide, then these different forms of temporary mobility, would represent an addition of 44.5% to the resident population of the zone. Of course, some of the mobilities are temporally differentiated – with commuting being far higher on weekdays, compared to leisure-related mobilities which tend to peak at weekends. However, there are also other forms of mobilities that we do not have any reliable data for, such as shopping and use of personal and public services, which result in substantial further additions to the temporary populations of the zone, and of the core generally.

**Change and Conflicts in a City of Mobilities**

It is difficult to capture social change and the interweaving of mobilities on the basis of secondary data, so we can only provide some very partial, and relatively speculative, insights here. In terms of the scapes which shape flows of people into and around the city, it is evident that there is a massive focus on the core as opposed to the ring. Ferries, rail services and bus services are all strongly focussed on the core, and facilitate diurnal and other mobilities. The
same applies to places of work, higher education facilities, second homes, shops and hotels. These scapes, reflecting particular technologies (for example, for transport) and forms of organization (for example, of hotel chains) channel flows into the core, and especially to selected areas within the core, while also being shaped by the flows over the longer term.

A proxy measure of some of the pressure points of these mobilities is found in the distribution of population density in 2008 (Figure 4). As would be expected, population densities are greatest in the core, and particularly in the central and coastal parts of that zone. But there are also islands of higher density throughout the ring, in settlements such as Havant, Waterlooville, Fareham and Gosport. These are particularly pronounced in a band at and beyond the northern edge of the core, which corresponds to the major east-west transport axis in the region (M27), as well as to the north west along the principal transport route towards London (A3/A3M). Again this underlines the importance of scapes with flows being ‘walled-in’ within the built urban form of the city. Between 2001 and 2008 there was significant spatial consolidation of population density in the ring to the north west in expanding settlements adjacent to the main northern arterial route from Portsmouth A3(M). This was accompanied by slight decreases in density in neighbouring small communities. This suggests a concentration of population in towns with better access to transport routes, as scapes respond to and shape flows.

**FIGURE 4 HERE**

There has also been intensification of population density within the core zone, namely in three specific locations to the west of the core, one in close proximity to the city centre and two in district centres linked to transport nodes. This densification also reflects the type of dwellings constructed between 1999 and 2007. There were 7,345 new dwelling completions in Portsmouth during this period, 84% were apartments and two thirds of these were two bedroom apartments. Where these new build flats were located in larger developments, as in these three sites, population density increased significantly. These population densities constitute part of, or at least are symptomatic of, the scapes that determine population flows.

In 2001, the core of Portsmouth already had some of the highest population densities in the South East of the UK, and large areas had population densities well in excess of 10,000 persons per square kilometre. By 2008, population density even exceeded 20,000 per square kilometre in one census small area adjacent to the city centre. These densities are of course associated with the generation of mobilities within and between the different zones of the metropolitan area.

Household size data also provide insights into the relationships between urban structures and mobilities. The average household size is greater in the ring than in the core, reflecting the geography of the family life cycle in 2001, when relatively more families with children lived in the ring, and young single person, including students, and childless older households tended to remain in the core (Table 8). Between 2004 and 2008 average household size increased in all zones although it continued to be higher in the ring than in the core. Households are generally becoming larger across the metropolitan area. These changes reflect a mixture of pressures including continued preference for suburban and small town living by local families, the growing number of migrants and larger migrant families concentrated within the core, and more young adults, including the expanded student population, sharing dwellings in the core and coastal zones (possibly exacerbated by the rise in housing costs during this period).

**TABLE 8**
The influence of scapes, and the changing nature of enfolded mobilities, can not be captured by secondary data at this scale, but the absolute centralization of population, continuing in-migration, student migration, and leisure related mobilities do generate significant contingent forms of mobilities.

**Conclusions**

At one level, the picture of mobilities in Portsmouth is a relatively simple one, with absolute centralization returning to the city in the 1990s after a long period of decentralization. However, this is to be understood more in terms of ‘widely stretched relationships’ (Massey 1994: 154) than of intra-metropolitan shifts, and in particular by net international migration.

Such migrations and population shifts only take us part of the way towards understand places as made as ‘articulated moments in networks of social relations and understandings (Massey 1994; 154), even in respect of mobility. For places are need to be understood as the articulation of multiple, partly overlapping and partly complementary, mobilities. Temporary mobilities in particular are important but often underestimated given the lack of secondary data, compared to migration.

These diverse flows are shaped by what Urry (2000: 36) terms scapes: ‘networks of machines, technologies, organisations, texts and actors that constitute various interconnected nodes along which the flows can be relayed’. The transport structure in particular, but also the configuration of tourist attractions, workplaces, the hospitality industry and urban leisure spaces are all key determinants of the scapes which shape a range of temporary mobilities. In Portsmouth, the coincidence of rail, bus, ferry and cruise liner facilities near the waterfront in the core are particularly critical in the metropolitan scapes. These do give a strong core-ring patterning to flows, although the journey to work data for Portsmouth remind us that flows are as strong within as between metropolitan zones. Furthermore, our analyses are determined by the selective availability of data – the myriad trips to school, to corner shops, to visit neighbours etc which are often highly localised and within zones are poorly documented.

These scapes not only shape the flows of people in the city, and how these are articulated in particular places, but also ‘generate for late twentieth-century people, new opportunities and desires, as well as new risks’ (Urry 2000: 36). There are new opportunities for working (for example, reflected in the growth of second homes, or changes in journey to work flows), for studying (reflected in student migration), and for leisure and tourism activities around the regenerated waterfront. These also generate contingent mobilities, shaping where people shop, eat out, or just meet up with friends. But new risks are also created in terms of overcrowding, non-compatible behaviours, environmental overloading, and social tensions. Planners and market mechanisms regulate these to some extent, but mobilities have a dynamism which is not easily contained by often lagging planning and policy actions.
References

Cheshire, P C and Magrini S (2009), Urban Growth Drivers and Spatial Inequalities: Europe – a case with Geographically Sticky People, London: London School of Economics, LEQS Paper Series 11
Coombes, M.G. (2000) “Defining locality boundaries with synthetic data” Environment & Planning A 32 1499-
Massey, D. (1994) Place, Space and Gender, Minneapolis: University of Minnesota Press.


Table 1: Population of the core, ring and coastal zones, 1999 and 2009

<table>
<thead>
<tr>
<th></th>
<th>RING</th>
<th>CORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>344,539</td>
<td>188,800</td>
</tr>
<tr>
<td>2009</td>
<td>341,698</td>
<td>203,503</td>
</tr>
<tr>
<td>Population Change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999-2009</td>
<td>-2,841</td>
<td>14,703</td>
</tr>
<tr>
<td>% Change</td>
<td>-4.27</td>
<td>7.78</td>
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</table>

Table 2: Internal (from elsewhere in the UK) in-, out-, and net migration, 1999 and 2009

<table>
<thead>
<tr>
<th></th>
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<th>CORE</th>
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<tr>
<td>Total internal in-migration</td>
<td>17,039</td>
<td>9,700</td>
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<tr>
<td>1999</td>
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<tr>
<td>Total internal out-migration</td>
<td>16,917</td>
<td>10,000</td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total net internal migration</td>
<td>122</td>
<td>-300</td>
</tr>
<tr>
<td>1999</td>
<td></td>
<td></td>
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<tr>
<td>Total internal in-migration</td>
<td>16,293</td>
<td>12,400</td>
</tr>
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<td>2009</td>
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<td></td>
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<tr>
<td>Total internal out-migration</td>
<td>15,656</td>
<td>11,700</td>
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<tr>
<td>2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total net internal migration</td>
<td>637</td>
<td>700</td>
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<td>2009</td>
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</table>
Table 3 International in-, out and net migration, 2003 and 2009

<table>
<thead>
<tr>
<th></th>
<th>RING</th>
<th>CORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total international in-migration</td>
<td>2003</td>
<td>488</td>
</tr>
<tr>
<td>Total international out-</td>
<td>2003</td>
<td>1101</td>
</tr>
<tr>
<td>migration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total international net</td>
<td>2003</td>
<td>-613</td>
</tr>
<tr>
<td>migration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total international in-</td>
<td>2009</td>
<td>1200</td>
</tr>
<tr>
<td>migration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total international out-</td>
<td>2009</td>
<td>318</td>
</tr>
<tr>
<td>migration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total international net</td>
<td>2009</td>
<td>882</td>
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<tr>
<td>migration</td>
<td></td>
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Table 4 Age distribution of in-migrants, 2009

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Ring 2009</th>
<th>Core 2009</th>
<th>Coast 2009</th>
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<tbody>
<tr>
<td>Total Internal In Migrants aged &lt;16</td>
<td>3065 (18.58%)</td>
<td>1300 (10.4%)</td>
<td>356 (10.4%)</td>
</tr>
<tr>
<td>Total Internal In Migrants aged 16-30</td>
<td>3762 (22.80%)</td>
<td>6300 (50.4%)</td>
<td>1719 (50.38%)</td>
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<tr>
<td>Total Internal In Migrants aged 31-65</td>
<td>8426 (51.07%)</td>
<td>4600 (36.8%)</td>
<td>1255 (36.78%)</td>
</tr>
<tr>
<td>Total Internal In Migrants aged &gt;65</td>
<td>1243 (7.54%)</td>
<td>300 (2.4%)</td>
<td>82 (2.40%)</td>
</tr>
</tbody>
</table>

Table 5 Intra and inter-zonal commuting flows 2001

<table>
<thead>
<tr>
<th></th>
<th>Ring 2001</th>
<th>Core 2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring</td>
<td>111,159</td>
<td>37,749</td>
</tr>
<tr>
<td>Core</td>
<td>18,816</td>
<td>68,985</td>
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Table 6 The distribution of second homes, 2001 and 2007

<table>
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<tr>
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<th>Core 2001</th>
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<tbody>
<tr>
<td>Total Number of Second Homes 2001</td>
<td>989</td>
<td>338</td>
</tr>
<tr>
<td>Total Number of Second Homes 2007</td>
<td>904</td>
<td>859</td>
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Table 7 Population mobilities in the coastal zone of the metropolitan core

<table>
<thead>
<tr>
<th></th>
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<th>TEMPORARY</th>
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<tbody>
<tr>
<td>POPULATION CHANGE</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Per annum % change</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NET MIGRATION</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>% of pop, per annum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COMMUTERS (% pop)</td>
<td></td>
<td>32.6</td>
</tr>
<tr>
<td>STUDENTS (% pop)</td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>SECOND HOMES (% pop)</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>VISITORS (avg daily/% pop)</td>
<td></td>
<td>2.2</td>
</tr>
<tr>
<td>CRUISE SHIP PASSENGERS (max per day as % pop)</td>
<td></td>
<td>2.1</td>
</tr>
<tr>
<td>BOATS IN MARINAS (estimated % of pop, if each boat carries 4 passengers at peak time)</td>
<td></td>
<td>1.4</td>
</tr>
</tbody>
</table>

Table 8 Average household size, 2001, 2004 and 2008

<table>
<thead>
<tr>
<th></th>
<th>RING</th>
<th>CORE</th>
<th>COAST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Household Size (Number of Persons including Children), 2001</td>
<td>2.38</td>
<td>2.30</td>
<td>2.27</td>
</tr>
<tr>
<td>Average Household Size (Number of Persons including Children) (Experian, 2004)</td>
<td>2.43</td>
<td>2.35</td>
<td>2.33</td>
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<tr>
<td>Average Household Size (Number of Persons including Children) (Experian, 2008)</td>
<td>2.48</td>
<td>2.41</td>
<td>2.49</td>
</tr>
</tbody>
</table>
a) Comparative framework

Figure 1: Contrasting mobilities

b) Changing relative importance

Figure 1: Contrasting mobilities
Figure 2 Principal internal migration flows, 2002

Figure 3 Principal internal migration flows, 2009
Figure 4 Population density 2008