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Megalopolis 50 Years On: The Transformation of a City Region

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Abstract

This article examines Megalopolis 50 years after Gottmann's seminal study of the most urbanized region of the US Eastern Seaboard. His study provides an invaluable datum point, and we use it as a benchmark for reexamining the socio-spatial transformations of a city region. After redefining Megalopolis and showing major aggregate trends since 1950, we analyze 39 selected variables for place level census data for 2,353 places to perform a principal components analysis (PCA). Our analysis shows that Megalopolis remains a significant center for the nation's population and economic activity. A half century of urban restructuring demonstrates that the forces of urban decentralization have made the region a more fully suburbanized agglomeration. We reveal a complex socioeconomic pattern of a vast urban area structured by class, education, housing tenure, housing age, and race and ethnicity. The cluster analysis reveals five distinct clusters of urban places identified by our PCA: 'affluent places', 'places of poverty', 'Black middle class places', 'immigrant gateway places' and 'middle America places'.

Introduction

In this article, we reexamine the city region of Megalopolis. This urban region was first analyzed in Jean Gottmann's (1961; 1987) classic study. In his influential book, Gottmann coined the term *Megalopolis* to describe the urbanized northeast of the United States. He described it as 'an almost continuous stretch of urban and suburban areas from southern New Hampshire to northern Virginia and from the Atlantic shore to the Appalachian foothills' with a total population of 37 million people in 1960 (Gottmann, 1961: 3). Gottmann first used the term in English in an article published in 1957 in the journal *Economic Geography* (Gottmann, 1957). He drew upon an earlier study of State Economic Areas, which was an innovative government survey to identify different economic areas in the country (Bogue, 1951). The study identified a special class of area termed 'metropolitan state economic areas' where 'the nonagricultural economy of such areas is a closely integrated unit and is distinctly different from the economy of the areas which lie outside the orbit or close contact with the metropolis' (Bogue, 1951: 2). A total of 149 metropolitan state economic areas across the country were identified and mapped. As Gottmann noted in his original article, this 1951 report

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'showed clearly the continuity of an area of metropolitan economy from a little north of Boston to a little south of Washington' (Gottmann, 1957: 189). Gottmann's work was enormously influential and, based on the great success of his 1961 book, the term Megalopolis entered the lexicon of urban studies.

In this article, we will examine the dynamics of urban change in Megalopolis since Gottmann's study, analyzing trends in population redistribution, economic restructuring, social segregation, patterns of immigration and the nature of urban differentiation. Our work is informed by debates in each of these areas. The first concerns the nature of population redistribution in US metropolitan regions. There is considerable evidence that major metro regions in the US have witnessed a shift from core to suburban areas (Jackson, 1985; Garreau, 1991; Beauregard, 2003; Hayden, 2003; Lang, 2003). The case of Megalopolis underscores these transformations.

The second concerns the nature of economic change in city regions around the world (Logan and Swanstrom, 1990; Knox and Taylor, 1995; Keil, 1998; Dear, 2001; Scott, 2001; Short, 2004; Taylor, 2004). The broad findings suggest that cities in developed countries have experienced manufacturing decline while select cities in developing countries, especially China, have witnessed a growth in manufacturing employment (Friedmann, 2005). This global shift in manufacturing employment has led to the deindustrialization of urban economies in first world city regions. In contrast, producer services, especially the advanced producer services sector, have retained their world city bias (Sassen, 1991). An examination of economic restructuring in Megalopolis will allow us to analyze these propositions in a major city region in the developed world.

The third area of work focuses on both the fluidity and persistence of racial and ethnic segregation in US cities (Massey and Denton, 1993; Katz and Lang, 2003). While segregation may be lessening at the larger scales of cities and counties, there is evidence that at more finely grained levels segregation may be continuing. Our analysis will allow a broad answering to this question.

The fourth body of work points to the importance of immigration to the population growth of large city regions. In both the US and in most other countries of the world, it is the larger city regions that have been the main destination point for rising levels of international immigration (Benton-Short, Price and Friedman, 2005). We will examine spatial trends of immigration data to analyze this assumption for Megalopolis.

The fifth area of interest is the burgeoning literature on suburban differentiation in US metropolitan areas. In summary, this body of work suggests that the model of suburban uniformity is no longer adequate as the aging of older suburbs, the immigration into suburbs, and racial heterogeneity are creating a more complex mosaic of suburban differentiation (Hanlon *et al.*, 2006). We will explore these themes by analyzing patterns of urban differentiation within Megalopolis.

We begin by redefining and reexamining the geography of Megalopolis by using county level data from the US census. We subsequently conduct a finer grain analysis of urban places in this city region to denote patterns of urban and suburban differentiation.

Redefining Megalopolis

While Gottmann is to be congratulated for providing the organizing idea of Megalopolis, it is difficult to build directly on his actual definition of Megalopolis since it is neither consistent nor clear. We have identified at least six different variants of the region used in his 1961 book. For example, Gottmann excluded all of Maine and Vermont when writing about manufacturing, but when writing about agriculture, he included one and sometimes two counties in Maine and four counties in Vermont.

It was therefore necessary to construct a more sophisticated definition (Morrill, 2006). Two measures were used: areas of contiguous metropolitan counties in 2000 and population density. The US Bureau of the Census identifies counties that are part of a metropolitan statistical area, what we term metropolitan counties. To provide a renewed spatial context for Megalopolis, contiguous metropolitan counties were identified over the period 1950–2000 for the entire region of the US Northeast. Using contiguous 2000 metropolitan counties as the single criterion, we would have a Megalopolis with thin strands connecting to upstate and western New York as well as western Pennsylvania. Since we wanted to keep the notion of a coherent, consolidated region, we made two exceptions (Kent County and Talbot County in Maryland, non-metropolitan counties surrounded by other metropolitan counties) and also used population density levels greater than 70 persons per square mile to identify counties of particularly dense population. On the basis of these two criteria, contiguous metropolitan counties and population density, we arrived at a spatial definition of Megalopolis (see Figure 1). Our Megalopolis consists of 52,310 square miles stretching across 12 states, one district (District of Columbia), and 117 counties. The region contains the four Consolidated Metropolitan Statistical Areas (CMSAs) of Washington–Baltimore, Boston, Philadelphia and New York. In the following sections, we provide a brief review of population change, economic restructuring, social segregation, and immigration to chart out an aggregate profile of Megalopolis in 2000.

Population change

During the second half of the twentieth century, Megalopolis witnessed tremendous urban growth. The population of Megalopolis was almost 32 million in 1950; yet by 2000, it had increased to almost 49 million (see Table 1). In absolute terms, the area witnessed a population increase of nearly 17 million. While the Megalopolis share of the total US population fell from almost 21% to just over 17%, this change can be read in a number of ways. This indicates a relative shift in national population away from Megalopolis, explained partly by the rise of the Sunbelt and the postwar growth across the country (Bernard and Rice, 1984). Yet, it also indicates that this small area of just over 52,000 square miles with only 1.4% of the national land surface still contains over 17.3% of the population. Despite the redistribution of the US population to the south and west, Megalopolis continues to remain a significant center for the nation's population with almost one in six of all US residents in this 'giant urban region'. In 1950, the average population density was 610 persons per square mile, and by 2000, it had increased to 931 persons per square mile. Megalopolis continues to be the home of a significant population concentration at densities much higher than the national average, and, despite relative decline, it is still the largest single concentration of population in the United States.

As Table 1 indicates, there has been substantial suburbanization in the region. In 1950, the population of Megalopolis was concentrated in urban cores. More than one in five of the total population lived in the central cores of the five large cities of Baltimore, Boston, New York, Philadelphia and Washington. Fifty years on, less than one in 10 lived in these same areas. In 1950, less than one in five lived in the suburbs. By 2000, two out of three lived in the suburbs. The urban cores had virtually no population increase during the 50-year period while the suburbs grew by almost 400%. One important countervailing trend is the continuing concentration of population in New York City. Unlike many other central cities in the US, New York increased its population slightly from 7.89 million in 1950 to 8.00 million in 2000. New York City, as a continuing home to advanced producer services and immigrants, has retained the core of its urban population.

Figure 1 Megalopolis redefined

The overall story of population growth in Megalopolis masks the decline of large cities such as Baltimore, Boston, Philadelphia and Washington. In 1950 over 4.6 million people, 14% of the total population of Megalopolis, lived in these cities. By 2000, this figure had fallen to 3.3 million or 6.8%. Hot spots of remarkable increase were in the newer suburban areas such as Fairfax and Prince William counties in Virginia, Ocean County in New Jersey and Howard and Charles counties in Maryland. Since Gottmann's time, important sites of growth were the suburban counties of southern Maryland and northern Virginia that surround the Washington, DC metropolitan area. This southern growth of Megalopolis is a local consequence of the rise in the military–scientific–

Table 1 Population change and distribution in Megalopolis, 1950–2000

	1950	2000
Population	31,924,488	48,720,108
As % of US population	20.9	17.3
Metro population	22,270,346	47,681,719
As % of Megalopolis	69.7	97.8
Population density (square miles)	610.2	931.3
As % of US population density	42.6	80.5
Population of metro centers	16,435,953	16,453,217
As % of Megalopolis population	51.4	33.7
Population of suburban counties	6,284,393	31,228,502
As % of Megalopolis population	19.6	64.0

industrial complex (Short, 2006). The long postwar rise of the US to global dominance is embodied in the population and economic growth of the Washington, DC metropolitan area.

Overall, the forces of urban decentralization have changed Megalopolis from a region of big city population to a much more fully suburbanized agglomeration. The exception is New York City which, after half a century, still remains a centralizing force in the region, retaining its population while many other cities have lost out to their surrounding suburbs.

Economic restructuring

A significant feature of global economic trends is the deindustrialization of older cities in advanced capitalist countries, the industrialization and expansion of cities in developing economies, and, in the US context, the deconcentration of economic activity from cities to suburbs. These trends are well noted in the general literature (Ellin, 2000; Soja, 2000; Dear and Flusty, 2002; Kitchen, 2002), identified in the most recent census data (Katz and Lang, 2003), reformulated in new models of US urbanism (Beauregard, 1989; Orfield, 2002) and more fully documented for the Los Angeles region (Scott and Soja, 1996; Dear, 2001). Our analysis of Megalopolis reveals similar patterns.

Gottmann refers to Megalopolis as the hinge of the US economy. Manufacturing has long played an important role. In 1900, the region contained almost half of all manufacturing workers in the entire country. By 1950, this had fallen to less than a third. The absolute numbers are also significant, and in 1954 manufacturing employment in Megalopolis was at an all time high of 4.6 million workers, comprising almost one-third of all non-farm workers in the region.

Comparisons of economic data over long time periods are often difficult since geographic scales change. However, one category that has retained its consistency is the number of production workers in manufacturing. We were able to compare this number for every county and metropolitan area in the region from 1958 to 1997. In 1958, Megalopolis had more than 3.1 million production workers that made up 27% of the national total. By 1997, the numbers had fallen to almost 1.5 million, only 12.3% of the national total (see Table 2). In the second half of the twentieth century, there was a significant deindustrialization of the region in both absolute and relative terms. The region has lost over 1.5 million manufacturing jobs since 1958, when one in four of all manufacturing production workers in the US were based in Megalopolis; by 1997, this

Table 2 Manufacturing employment in Megalopolis, 1958–1997

	1958	1997
Production workers in central cities	1,553,394	451,484
As % of Megalopolis population	49.2	30.4
Production workers in suburban counties	1,156,400	1,047,222
As % of Megalopolis population	36.6	70.5

Table 3 Financial services in Megalopolis, 1997

Category	Number	As % of US
Finance and insurance	2,534,209	43
Securities intermediation	568,939	81
Information and data processing	113,665	33
Professional, scientific and technical	2,980,794	57

figure had fallen to just over one in eight. The number of production workers in manufacturing decreased by half while the region's share of national manufacturing employment shrunk. Megalopolis is no longer the manufacturing powerhouse of the US economy as jobs have shifted to other parts of the national and global economy. The loss has been uneven across the region. While the number of production workers in central cities fell from over 1.5 million in 1958 to less than 0.5 million in 1997, the comparable figures for the suburban counties remained around 1 million.

A contrasting portrait of Megalopolis emerges when we examine the service sector, and, in particular, producer services. Table 3 shows the number of workers in selected producer services from the most recently available data in the US Economic Census of 1997. While this is only a snapshot of one time period rather than a trend, what is truly remarkable is the extent to which Megalopolis is a major service center. As noted in Table 3, three service sectors (finance and insurance, information and data processing, and professional, scientific and technical) employed a total of 5,628,668 people in 1997, with 1,927,480, or 34.2% in the four metro areas of New York (0.974 million), Washington (0.464 million), Philadelphia (0.266 million) and Boston (0.222 million). There are almost three million workers employed in the professional, scientific and technical services sector, well over a half of all such workers in the entire country. The largest single center is in Washington, DC with 285,204 workers, closely followed by New York City's 240,161 workers. In 1997, the two metro regions of New York and Washington–Baltimore had respectively 569,807 and 346,773 of these jobs, 18% of the national total.

An even more pronounced image of a new Megalopolis emerges when we consider advanced producer services. More than half of the nation's workforce in the finance and insurance sector are located in Megalopolis, with one in 10 US workers in this sector based in the New York metropolitan area (Sassen, 1991). The figures are even higher for the subcategory of securities intermediation. Eighty-one percent of all workers in the US in this category are employed in Megalopolis, with one in three workers nationally in this sector located in the New York metropolitan area.

With the shedding of manufacturing jobs, Megalopolis has become more of an information processing center than a metal bashing economy. The loss of manufacturing jobs is not only a sectoral shift; it also results in major social change. Deindustrialization is as much a social process as an economic shift. It is the analysis of information rather than the manipulation of metal that is now the defining characteristic of Megalopolis.

Patterns of segregation

An important element of US social history and development relates to issues of race and ethnicity. Megalopolis is no exception. In fact, Gottmann refers to the importance of Megalopolis as 'the gates' for immigrants to America while also referring to the blight of Black and other non-White urban neighborhoods (Gottmann, 1961). To examine this subject, we focus on patterns of segregation among four main racial/ethnic groupings: Black, White, Asian and Hispanic. These groups are not homogenous. These categories are social constructions, but they are important social constructions nonetheless.

The starting point of our analysis is 1960. US census definitions of race and ethnicity have changed over time, and our analysis is limited to those categories that are comparable over time. In 1960, both the nation and Megalopolis were overwhelmingly White. Almost nine out of every 10 persons were classified as White. By 2000, the majority population was still White, but there had been a growth in the absolute and relative numbers of Blacks (15.4%), Asians (4.8%) and Hispanics (11.3%). By 2000, Megalopolis, like the rest of the nation, had become a multiracial, multiethnic region.

Both the urban cores and suburbs have become more multiracial. Over 83% of the central city population was White in 1960, but only 42% by 2000. In 1960, 96% of the suburban population was White, but by 2000, this figure had fallen to 78%. In 1960, the White population was almost evenly split between metropolitan core and suburbs. Half of the White population lived in a central city, but by 2000, only two out of every 10 White residents of Megalopolis resided in a central city.

The Black and Hispanic populations still show a marked central city bias, and Asians overwhelmingly resided in central cities in 1960. Yet, by 2000, they had become markedly more suburban. In 2000, majority Black areas in Megalopolis included such locations as Baltimore City (64.3% Black), Prince George's County (62.7%), District of Columbia (60.0%) and Philadelphia (43.2%). Hispanic enclaves were particularly present in areas including Bronx, New York (48.3% Hispanic), Hudson County, New Jersey (39.7%) and Passaic, New Jersey (29.9%). Asian enclaves can also be noted in urban and inner suburban counties including Queens County, New York (17.5% Asian), Middlesex County, New Jersey (13.8%) and Fairfax County, Virginia (13.0%).

We analyze patterns of segregation by using the index of segregation (IS). This widely used measure compares the distribution of the subgroup compared with the total population expressed as a value from one to 100. Values closer to 100 indicate a greater degree of residential segregation. Table 4 lists the segregation index values for the four main groups. We can interpret them using the example of the index for Whites in 1960 — 43.3%. This value can be interpreted as 43.3% of the White population would have to move to another area in 1960 to achieve the same distribution as the total population.

As Table 4 indicates, indices of segregation have remained consistently high over the time period, indicating that racial and ethnic segregation has persisted in Megalopolis. Whites and Blacks were more segregated in 1980 than 1960. By 2000, they returned to their 1960 pattern. Levels of segregation for the Asian population remained approximately the same while Hispanics became slightly less segregated in 2000 compared with 1980. All of the groups exhibit high degrees of segregation at the county level, with the most marked segregation for the Black and White populations. Despite the passing of important civil rights legislation and the changing social make up of

Table 4 Index of segregation in Megalopolis (%)

Year	White	Black	Asian	Hispanic
1960	43.3	43.8	37.8	
1980	51.2	48.4	35.1	48.4
2000	40.8	42.6	34.2	38.0

Megalopolis in the past 50 years, segregation is still a defining characteristic of this large city region.

Patterns of immigration

For the past 30 years, US immigration has been more widely spread throughout the larger city regions of the nation (Frey, 2003). It has been argued that recent immigration into the US has created new social geographies of immigrant distribution in the metropolis (Waldinger, 2001; Laguerre, 2004). Gottmann's study of Megalopolis was undertaken in the middle of an era of low immigration flows. From the late 1920s to the mid-1960s, there was limited immigration. Between 1961 and 2000 over 24 million immigrants were admitted to the US. In 1960 and 1980, the number of foreign born in Megalopolis was approximately four million, constituting 10% of the region's total population. In 2000, the absolute and relative proportions had increased dramatically so that by the century's end, 10.2 million people in Megalopolis were foreign born. This number of foreign born constituted approximately 20% of the region's population, which was double the national average.

Megalopolis attracted a considerable number, both in absolute and relative terms, of the foreign immigration into the country. Nearly half of all foreign born migrants admitted to the US since 1960 settled in Megalopolis. The large economically resilient urban regions in Megalopolis, such as New York and Boston, have acted as powerful magnets for the foreign born population, while more fiscally challenged cities such as Scranton and Baltimore have been bypassed. For example, only 3.1% of Scranton's population was foreign born in 2000, which was less than half the 1960 figure of 6.5%. Similarly, Baltimore City had 4.2% foreign born in 1960 but only 4.6% in 2000, and this represents an absolute population decrease from 39,439 to 29,638.

The foreign born population metric is a useful barometer of economic growth and decline (Muller, 1993). Recognizing declining cities, immigrants located in urban cores where demand for low wage service workers was high; yet, by 2000, they had also settled in the suburbs. Table 5 shows an increase in the foreign born population in both central cities and suburban counties of Megalopolis. Nearly a quarter of the nation's foreign born population resided in the central cities of Megalopolis, while just over one-tenth resided in suburban counties by 2000. Persistent immigration to Megalopolis has allowed the region to solidify itself as a global magnet for international population growth.

Urban places in Megalopolis

Thus far our analysis has been focused on a general level, homing in on the county and regional geographic scale. However, aggregate figures can only tell us so much, and questions arise about the type and structure of urban places within Megalopolis. To develop a more nuanced understanding of social processes within this city region, a finer grain examination is needed. In this section, we present the results of principle components and cluster analyses at the census place level geography to define the heterogeneity of the internal processes of this city region.

Table 5 Spatial distribution of the percentage of the foreign born population in Megalopolis

	1960	1980	2000
Central cities	14.1	14.2	24.8
Suburban counties	7.5	7.3	11.8

We rely on the *State of the Cities Data System*, a dataset produced by the US Department of Housing and Urban Development (HUD). This publicly available dataset contains census place level data for a variety of socioeconomic measures. The US Census defines three types of places: census designated places (CDPs), consolidated cities and incorporated places. CDPs are defined by the Bureau of the Census in conjunction with local governments. They are places that are unincorporated with concentrations of population, housing, commercial sites and a degree of local identity. Consolidated cities and incorporated places are political municipalities with their own local governments that administer services to residents within the place. In this analysis, we combined all of these US census places to examine all cities and suburban places within the 44 metropolitan areas of Megalopolis.

Principal components analysis

In 2000, our Megalopolis contained 2,353 urban places. We assembled a data matrix table ($39 \times 2{,}353$) containing 39 variables to analyze the 2,353 identified places. Table 6 lists the 39 variables we selected. These variables cover important dimensions of

Table 6 Selection of variables by category

Variable Name	Description
Population characteristics	
BLACK	Percentage of population Black
WHITE	Percentage of population White
HISPANIC	Percentage of population Hispanic
OTHER	Percentage of population other race
FOREIGN	Percentage of population foreign born
Income characteristics	
POV	Percentage of persons living in poverty
FI20PCTN	Percentage of families below 20th national income percentile
FI80PCTN	Percentage of families above 80th national income percentile
MFI	Median family income
RATIOMFI	Ratio of MFI to MFI MSA
MHI	Median household income
RATIOMHI	Ratio of MHI to MHI MSA
Family structure	
MPFAMCH	Percentage of population married-parent family with children
SPFAMCH	Percentage of population single-parent family with children
Educational attainment	
DNGHS	Percentage of population did not graduate high school
HSGRAD	Percentage of population high-school graduate
COLLEGE	Percentage of population college graduate
Housing characteristics	
OWNER	Percentage of owner-occupied housing units
RENTER	Percentage of renter-occupied housing units
VACANT	Percentage of vacant housing units
ROOMS3	Percentage of housing units with three rooms or less

Table 6 *Continued*

Variable Name	Description
ROOMS46	Percentage of housing units with four to six rooms
ROOMS7	Percentage of housing units with at least seven rooms
YB1939	Percentage of housing units built before 1939
YB4049	Percentage of housing units built between 1940 and 1949
YB5069	Percentage of housing units built between 1950 and 1969
YB7089	Percentage of housing units built between 1970 and 1989
YB1990	Percentage of housing units built after 1990
Employment industry and occupation	
AER	Percentage of labor force in arts, entertainment, recreation, accommodation, and food services industry
EHS	Percentage of labor force in education and health services industry
MANUF	Percentage of labor force in manufacturing industry
FIRE	Percentage of labor force in finance, insurance, and real-estate (FIRE) industry
INF	Percentage of labor force in information industry
PROS	Percentage of labor force in professional and scientific industry
TRADE	Percentage of labor force in wholesale and retail trade industry
GOVT	Percentage of labor force in public administration industry
SERVOCC	Percentage of labor force in services occupations
MANOCC	Percentage of labor force in management and other professional occupations
UMEMP	Percentage of unemployed persons

population, income, family structure, education, housing and employment. While all variable selection can be criticized, we hold that this selection is both intuitively obvious and chimes with both classic and contemporary studies (Shevky and Bell, 1955; Berry and Rees, 1969; Murdie, 1969; Perle, 1981; Davies, 1984; Davies and Murdie, 1993; Wyly, 1999; Swanstrom *et al.*, 2004).

We used the data in a principal components analysis (PCA). PCA transforms a large number of variables into a new, smaller set of composite variables, or principal components, that share a common variance. This technique acts as both a data reduction method and a process for identifying the most important empirical elements embedded in a dataset. PCA has been an important tool in deciphering the spatial organization of urban places (Berry and Horton, 1970; Berry and Kasarda, 1977; Taylor and Hoyler, 2000; Taylor *et al.*, 2002). More recently, it has become an extremely popular technique in market research for classifying residential neighborhoods (Cooper and Schindler, 2003). It is ideal for analyzing our large data matrix and highlighting variation among places in Megalopolis.

We employed PCA that used a Varimax rotation method with Kaiser normalization. The rotation enabled us to redefine derived principal components so as to make sharper distinctions in the meanings of the extracted components. The main outputs of PCA are component loadings and component scores. Component loadings measure the relationship between the inputted variables and the resulting components. Component scores measure the relationship between the places and the components.

To facilitate interpretation, principal components with an eigenvalue over two were extracted. In total, the analysis consisted of five principle components. Table 7 indicates that five components accounted for 62% of the total variance. Component 1 accounted

Table 7 Total variance explained for PCA

		Rotation Sums of Squared Loadings	
Component	Eigenvalue	% of Variance	Cumulative %
1	11.16	28.61	28.61
2	4.06	10.41	39.03
3	3.95	10.19	49.14
4	2.53	6.50	55.64
5	2.50	6.39	62.02

for nearly 29% of the total variance and components 2 and 3 added 10% each for a cumulative total of almost 50%. The first three components of our rotated analysis accounted for half of all variation in the data. Together, the five components explained almost two-thirds of the initial variation. In other words, we reduced the number of variables substantially without losing too much variance. The communalities demonstrate a measure of the proportion of variance explained by the five components for each of the original variables. Communalities exceeded 0.70 for almost three-quarters of the 39 variables in our analysis (see Table 8).

The component loadings outlined in Table 9 allow us to interpret the meaning of the components. For component 1, the key loadings refer to income, education and employment in managerial occupations. We term component 1 'income and education'. This finding reinforces numerous studies that show that socioeconomic status and education are key factors in the stratification of US society. From Shevky and Bell (1955) to more recent studies, this component has persistently been uncovered as the primary source of urban differentiation in the US. The granite-like persistence of this finding is testimony to the nature of urban differentiation in advanced capitalist societies. This component distinguishes a continuum between urban places composed of high-income, well educated professionals and those places with poorer, less-educated residents.

The most important loadings for component 2 are variables that measure Black populations, single-parent households, and poor households. These variables allow a relatively easy identification as 'poverty' (Wilson, 1987; Jargowsky, 1997).

The loadings for component 3 highlight foreign born, racial minorities and renter households. We term this component 'immigrants and renters', and it identifies immigrant, high-rental urban places from homeowners in Megalopolis.

The component loadings for component 4, which we term 'older housing', identify areas with an older housing stock. These cut across racial and income diversions. Emerging from the loadings for component 4 is the dichotomy between the aging, inner-ring suburbs and newer residential developments, often on the outer fringes of metropolitan areas in Megalopolis. Many inner-ring suburbs, particularly in the Megalopolis region, are now over 50 years old, and experiencing decline (Jackson, 1985; Hudnut, 2003; Jargowsky, 2003; Lucy and Phillips, 2000; 2006). Inner-ring suburban decline juxtaposed against the growth of the outer suburbs acts as visible evidence of suburban restructuring in Megalopolis.

Component 5 has only two important loadings — Black population and public sector employment. We term this component 'Black and government workers' because it identifies places with a high percentage of the Black population and a high percentage of the public administration workforce.

The components we have identified combine both traditional sources of differentiation such as socioeconomic status, as well as components more distinctive to our study of Megalopolis after half a century of urban change (see Table 9). In part, this is a function of the variables we selected. For example, since we input a number of housing variables, it is no surprise that one of our components encompasses the age of

Table 8 Communalities for PCA

Description of Variables	Extraction
% population Black	0.842
% population White	0.918
% population Hispanic	0.722
% population other race	0.582
% foreign born	0.879
% population in poverty	0.724
% families below 20th income percentile	0.810
% families above 80th income percentile	0.942
Median family income (MFI)	0.926
Ratio of MFI to MFI MSA	0.811
Median household income (MHI)	0.909
Ratio of MHI to MHI MSA	0.849
% married-couple family with children	0.818
% single-parent family with children	0.852
% did not graduate high school	0.814
% high-school graduate	0.846
% college graduate	0.929
% owner-occupied housing unit	0.852
% renter-occupied housing unit	0.852
% vacant housing unit	0.510
% housing with three rooms or less	0.719
% housing with four to six rooms	0.677
% housing with at least seven rooms	0.813
% housing built before 1939	0.838
% housing built between 1940 and 1949	0.621
% housing built between 1950 and 1969	0.762
% housing built between 1970 and 1989	0.797
% housing built after 1990	0.636
% workers in arts, entertainment, food services	0.807
% workers in education and health services	0.479
% workers in manufacturing	0.704
% workers in FIRE	0.554
% workers in information	0.499
% workers in professional and scientific	0.679
% workers in wholesale and retail trade	0.501
% workers in public administration	0.720
% workers in services occupations	0.797
% workers in management occupations	0.904
% population unemployed	0.437

Table 9 PCA for urban places in Megalopolis

	Rotated Component Loadings				
	1	2	3	4	5
Variables	Income and Education	Poverty	Immigrants and Renters	Older Housing	Black and Government Workers
% population Black		0.542			0.699
% population White		–0.542			
% population Hispanic			0.711		
% population other race			0.703		
% foreign born			0.881		
% population in poverty		0.684			
% families below 20th income percentile		0.638			
% families above 80th income percentile	0.922				
Median family income (MFI)	0.924				
Ratio of MFI to MFI MSA	0.857				
Median household income (MHI)	0.902				
Ratio of MHI to MHI MSA	0.864				
% married-couple family with children		–0.577			
% single-parent family with children		0.598			
% did not graduate high school		0.581			
% high-school graduate	–0.840				
% college graduate	0.900				
% owner-occupied housing unit			–0.529		
% renter-occupied housing unit			0.529		
% housing built between 1940 and 1949				0.770	
% housing built between 1970 and 1989				–0.845	
% housing built after 1990				–0.749	
% workers in public administration					0.819
% workers in services occupations					
% workers in management occupations	0.868				
% population unemployed		0.598			

Note: Rotated using Varimax with Kaiser normalization in 16 iterations.

housing. It is also, in part, a function of new sources of differentiation. The high level of immigration into Megalopolis is a new source of social change. The recent creation of a Black middle class strongly correlated with government employment is another new source of differentiation. In sum, our results reflect the initial variable selection, echo traditional social area analysis, and identify new processes of social transformation in this globalizing city region.

The cluster analysis

Each urban place in Megalopolis has a range of component scores. In order to identify places of similarity, we conducted a cluster analysis on the component scores for each place in Megalopolis. The grouping procedure we employed was k-means clustering analysis, a technique employed extensively in urban studies (Orfield, 2002; Derudder *et al.*, 2003; Taylor and Derudder, 2004). K-means clustering was ideal for our analysis since it is designed for a large number of observations. This technique allows one to identify a range of different clusters. We decided to adopt the five-cluster solution because it combined the qualities of ease of interpretation with still substantial differentiation between clusters. Table 10 indicates the distribution of cluster cases. We have given the following names to the five clusters: 'middle America', 'affluent', 'places of poverty', 'immigrant gateway' and 'Black middle class'. We summarize the dominant features of each cluster in Table 11.

Middle America is the largest cluster. It includes 66% of all places in Megalopolis and is composed of 1,554 urban places and to some extent a default cluster that captures the vast 'middle' ground of standard suburbia. The population of middle America is 36% of the total population of urban places in this giant urban region. There are a total of 266 affluent places, which represents 11% of all places in Megalopolis. Immigrant gateways make up a total of 229 places and 10% of all places in Megalopolis. Immigrant gateways absorb a large portion of the total population of Megalopolis — 36% — mainly as a result of New York City's large population. The places of poverty cluster is composed of 188 places, 8% of all places. The Black middle class cluster has 116 places, 5% of all places in Megalopolis.

Based on our analysis, middle America places have, on average, a median household income of $56,227, a median household income that is almost on par with the median household income of their respective metropolitan area. It is slightly more than the national median household income of $41,994, which is not surprising since middle America is suburban in nature. Similar work characterizes these places as 'white bedroom suburbs and manufacturing suburbs' (Mikelbank, 2004: 951). These places are predominantly White middle class suburbs, and the majority of the housing stock is owner occupied. A classic example of a middle America urban place is Levittown, New York, the suburb created by the famous Levitt Company who built major tract development housing in both Long Island and Pennsylvania after the second world war. In 2000, Levittown had a median household income of $69,923, over $10,000 above the average middle America suburb. Almost 90% of Levittown residents are White, married, and own their own homes. Almost 90% of the housing stock in this suburb was built before 1970, characteristic of other early suburbs in the United States.

Another example of a middle America suburb is Dundalk, Maryland, an older, industrial suburb adjacent to Baltimore City. Dundalk was, for almost a hundred years, the home of Bethlehem Steel Corporation until the company filed for bankruptcy in October 2001. It was one of the first planned communities in the nation, built for local

Table 10 Distribution of cluster cases in Megalopolis

Cluster Name	Number of Cases	Percentage of Total Cases	Population	Percentage of Total Population
Middle America	1,554	66	14,373,715	36
Affluent	266	11	2,492,562	6
Places of poverty	188	8	6,576,590	16
Immigrant gateway	229	10	14,642,935	36
Black middle class	116	5	2,098,934	5
Total	2,353	100	40,184,736	100

Table 11 Neighborhood typology for Megalopolis

	Demographics	Income	Education and Employment	Housing	Examples
Affluent places	Mostly White; married parents	Very high income; low poverty	College graduates; management occupations	Newer, large housing stock; high homeownership rates	Scarsdale, NY; Chevy Chase, MD
Places of poverty	Black; Hispanic; single-parent families	High poverty; low income	High-school dropouts	High rental; older housing stock	Camden, PA; Asbury Park, NJ
Black middle class places	Significantly Black; some single-parent families	Middle income; low poverty	College graduates; high public sector employment	Built after 1970s; high homeownership rates	Bowie, MD; Mitchellville, MD
Immigrant gateway places	A quarter foreign born; Hispanic and other races high; mostly married couples with children	Low to middle income; some poverty	College graduates; some high-school dropouts; varied education levels	High rental; low homeownership rates	Hoboken, NJ; Tysons Corner, VA
Middle America places	Mostly White, married families; '1950s image' of suburbia	Low to middle income; low poverty	High-school graduates; some college	Mostly homeowners; postwar bedroom communities	Levittown, NY; Dundalk, MD

steel workers. In many ways, Dundalk is a prime example of a stable suburb where 'average' American families moved for decent paying jobs. However, as a traditional steel-manufacturing town, this suburb has witnessed declines in manufacturing employment. The consequences have been increased poverty and declining household incomes. The clustering of Dundalk as a middle America urban place indicates the wide range of characteristics among places in this cluster. In 2000, the median household income in Dundalk was almost $40,000, much less than that for Levittown residents. The percentage of parents that were married in Dundalk was 61% compared with 87% in Levittown. In 2000, the homeownership rate in Dundalk was 17% less than the rate in Levittown. Dundalk shows more signs of decline than Levittown.

Our analysis finds that affluent places have, on average, a median household income of $109,205, a median household income more than double the median household income of their respective metropolitan area, and substantially higher that the national median income of $41,994 in 2000. Eighty-seven percent of the residents in these affluent suburbs own their own home. These places are overwhelmingly White and 40% of the population has a college degree. An example of these high-income places includes such suburbs as Chevy Chase, Maryland in the Washington, DC metropolitan area, and Scarsdale, New York.

Chevy Chase, Maryland is a small, rather exclusive community of less than 1,000 households, located northwest of Washington, DC. In 2000, the town was 92% White and 88% of the population had college degrees. There were few renters in this affluent community, with 95% of housing units owner occupied. The median household income in 2000 was $160,332, two and a half times that of the Washington, DC region, and considerably higher than the national median household income of $41,994. Chevy Chase benefits from proximity to Washington, DC, with 12% of the workforce employed by government in 2000.

Scarsdale, New York is similarly affluent, although it is an urban place with a much larger and more diverse population than Chevy Chase. In 2000, there were almost 18,000 people living in Scarsdale, with 82% of the population White. However, a rather large Asian population resides in this town with almost 4% of the population Japanese, 3% Chinese, 2% Indian, and 2% Korean in 2000. This urban place had a median household income of $182,792 in 2000, almost four and a half times the median household income of the New York metropolitan area. The population of Scarsdale is highly educated with 80% of the population college graduates. Many members of the workforce in Scarsdale are managers and professionals, with 20% employed in finance, information and real estate (FIRE), and 26% employed in the health and educational fields.

These affluent places contrast with places of poverty in Megalopolis. According to our analysis, 17% of residents in places of poverty live below the federal poverty standard, and the median household income of $35,625 is 25% less than the median household income of their respective metropolitan area. It is also $6,369 less than the national median household income. Forty-two percent of the population in this cluster is a single parent, 29% did not graduate high school and 38% of families were below the 20th percentile of income nationally. While many central cities in Megalopolis exhibit the pathologies associated with the places of poverty cluster, there are many examples of these areas that are suburban in nature.

Two telling examples of places of poverty are Asbury Park, New Jersey and Camden, New Jersey. Asbury Park, once a thriving seaside resort, has been in decline since the 1960s. With increased prosperity and improved air travel, the desire of vacationing at this once bustling resort waned. After a race riot in the 1960s, White flight ensued. In 2000, the population was over 60% Black and 15% Hispanic, and the poverty rate among residents stood at 30%. The median household income in Asbury Park was $23,081 in 2000, almost two-thirds less than the median household income of its metropolitan area, and almost $19,000 less than the national median. In 2000, 70% of families were single-parent families, and 80% of housing units were rental properties.

Camden, New Jersey, is another example of a place of poverty, was developed in the shadow of Philadelphia (Kirp *et al.*, 1995). It has suffered deeply from declines in manufacturing employment, and has lost out to suburban New Jersey since the second world war. This city has a population of almost 80,000 residents. Almost half of the population is Black and 40% is Hispanic. Largely a place of minorities, it has witnessed increased poverty and declining incomes in recent decades. The poverty rate increased from 20% in 1970 to 35% in 2000 and the median household income was $23,421 in 2000, less than half the median household income of the metropolitan area. Camden exhibits many of the social pathologies associated with concentrated poverty. Almost half the population did not graduate from high school, 68% of parents are single, and over half the population does not own a home. Camden is a classic example of a place of poverty.

Megalopolis is also composed of immigrant gateways. On average, these places have populations that are almost 30% foreign born. Immigrant gateways are also places where 45% of residents rent homes. These areas are otherwise very similar to middle America places in that income levels are similar to metropolitan area incomes, and three-quarters of all parents in these places are married. The population of these places is slightly more educated than the population of middle America, with 35% college graduates. The proliferation of immigrant gateways, particularly in the New York and Washington, DC regions, echoes the effect of new waves of immigration that is both urban and suburban. Two examples are Hoboken, New Jersey and Tysons Corner, Virginia in the Washington, DC region.

Hoboken, New Jersey is a densely populated city on the west side of the Hudson River, across from Manhattan, New York. This area has been a hub for immigrants to the United States for decades. This immigrant gateway became a settlement for many Italians and Irish immigrants living in the New York region. Other ethnic groups followed, most notably the Puerto Ricans in the 1960s. Fifteen percent of the population of Hoboken is foreign born, and over 20% of the population is Hispanic. More than three-quarters of families living in Hoboken rent homes. Rental properties are the mainstay of housing in this area, similar to many other areas close to New York City.

Tysons Corner, Virginia, another immigrant gateway in Megalopolis, is the archetypal edge city (Garreau, 1991; Knox, 1991). Located off the Washington, DC Beltway, this place is home to Tysons Corner Center, a massive retail complex that includes 230 stores, over 3,400 hotel rooms, and 25 million square feet of office space. The population of Tysons Corner is 18,540, with almost 35% foreign born, and 70% have four-year university degrees. The foreign born population is largely comprised of Hispanics and Asians. The Asian population works in the high-technology industries in the Washington, DC region, and Hispanics generally work in retail trade, landscaping and other service jobs. Tysons Corner is a prime example of an immigrant suburban settlement.

Other minority places in Megalopolis include Black middle class places. On average, Black middle class places have a population that is 45% Black. The median household income is $60,316, slightly more than the median household income in their respective metropolitan area, and $18,000 more than the national median household income. Seventy percent of housing in Black middle class places is owner occupied, and 66% of parents in these areas are married. Nearly 30% of the population graduated from college, and 16% of the workforce is employed by local, state and federal government. This cluster is one of the most distinctive features emerging from our research of Megalopolis. Few other studies of this nature have identified such a distinctive cluster of places that can be legitimately identified as Black, middle class. Two excellent examples of Black middle class places are found in the Washington, DC region. They include Bowie, Maryland and Mitchellville, Maryland.

Bowie, Maryland is the largest municipality in Prince Georges County and the fourth largest city in Maryland. It has a population of over 50,000 people, which is approximately one-third Black. The median household income in Bowie is $76,778,

almost 25% higher than the median household income in the Washington, DC region, and 80% higher than the national median household income. Eighty-five percent of housing units are owner occupied, and 80% of parents are married. In terms of employment, 18% of workers are employed in the public sector. This place is a typical middle class place, where government employment offers stability to many Black families living there.

Mitchellville, Maryland, is another Black middle class place in the Washington, DC metropolitan area whose population is 78% Black. This suburb of Washington, DC has a median household income of $84,687, which is 37% higher than the median household income of the metropolitan area, and double the national median. More than 73% of parents are married, and a quarter of the workforce is employed in the public sector. Ninety-four percent of the housing units in Mitchellville are owner occupied. Mitchellville is a telling example of a Black middle class suburb that has benefited from its proximity to the Washington, DC governmental structure and nearby employment opportunities.

Spatial trends of urban places

Megalopolis is comprised of places that fall into each cluster. Let us now briefly consider the spatial distribution of these clusters in two metropolitan areas. Figure 2 is a map of the urban clusters in the New York and New Jersey areas of Megalopolis. New York City stands out as still a significant immigrant gateway in the United States. Many of the middle America suburbs stretch down the spine of Long Island, passing through the 'gold coast' of affluent places in the northern section of Long Island. These affluent places create a wedge of wealth around New York City, situated in areas of Connecticut and Westchester County region. There are also numerous pockets of poverty highlighted by the existence of places of poverty primarily in the deindustrialized sections of New Jersey. It is also interesting to note the lack of Black middle class places in the New York and New Jersey regions of Megalopolis. This detail contrasts sharply with the clustering of Black middle class places in the Baltimore-Washington, DC corridor (see Figure 3). The clustering of Black middle class places in Prince Georges County in the Washington, DC region reflects the contribution of government employment to the rise in Black social status. Similarly, the cluster of Black middle class suburbs northwest of Baltimore City is a result of employment among local Black residents in the Social Security Administration and Centers for Medicaid and Medicare just outside Baltimore City.

Conclusion

When Gottmann's *Megalopolis* was published in book form in 1961, he emphasized an industrial, edged, centered city region. In the intervening years, this region, like many other city regions, has become more postindustrial, edgeless and decentralized. His original Megalopolis was a manufacturing hub of the national economy, with still substantial central city populations, few immigrants and marked racial–ethnic segregation. Some of the most significant changes include the relative shift of population from the central cities to the suburban counties; the loss of manufacturing jobs, especially in the central cities; the growth of services; the continuing persistence of racial segregation; and the increase in the immigrant population, especially in the selected central cities and suburban counties.

As with the US in general, decentralization is a prevailing pattern. Megalopolis has grown in population since 1950. There has been a profound redistribution from the central cities to the suburbs that embodies a suburban shift in economic activity and metropolitan vitality. More people in Megalopolis now live in suburban counties than

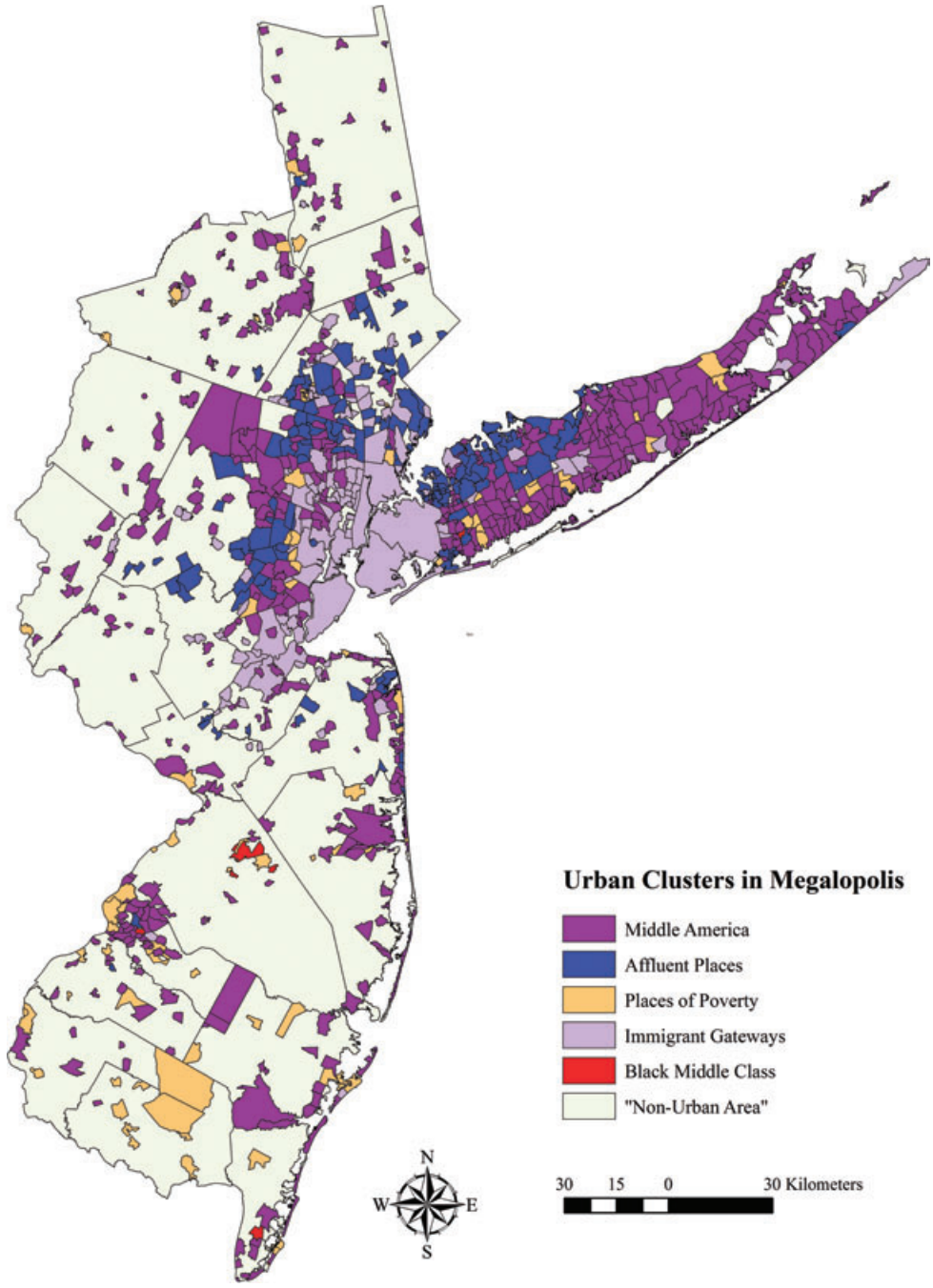

Figure 2 Clusters of places in New York and New Jersey

central cities. In many respects, the region has changed from a big city population to a much more fully suburbanized agglomeration. There are two exceptions to this rule. New York City acts in many ways as a centralizing *economic* force while Washington, DC acts as a centralizing *political* force in the Megalopolis region.

Given the metropolitan fragmentation of US local government, big cities in Megalopolis have lost their tax base while suburban counties have had the task of dealing

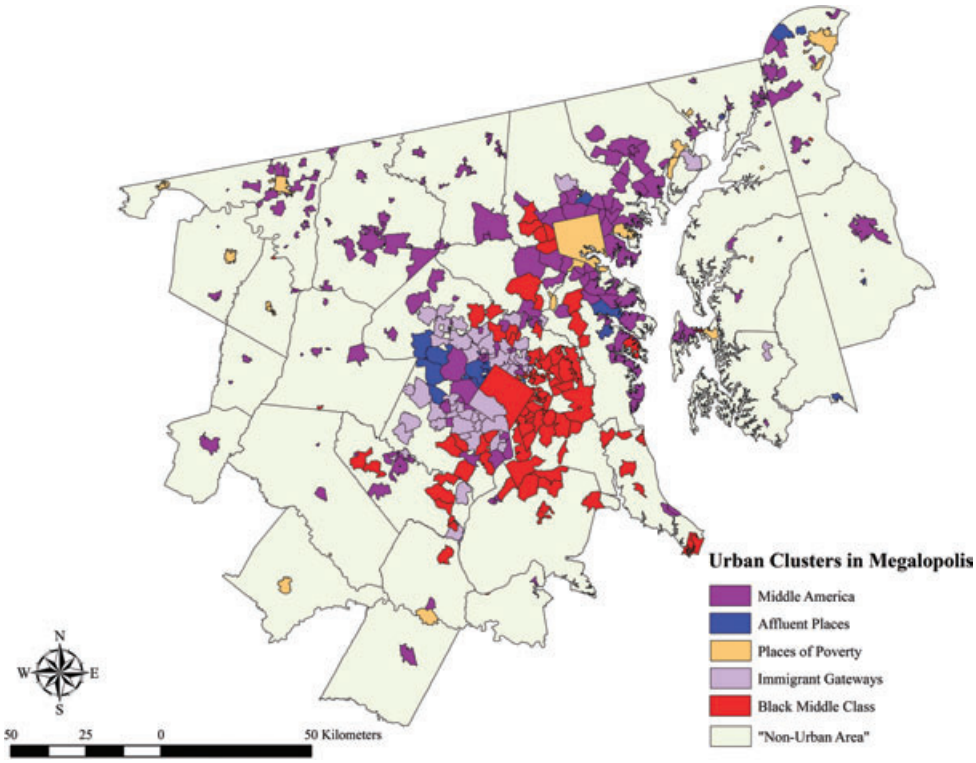

Figure 3 Clusters of places in the Baltimore–Washington, DC corridor

with growth. The story of the central cities is dominated by a growing fiscal crisis as they cope with the out-migration of taxpaying citizens and business enterprises. There is a continuing need to attract people and investment back to the city. Increased suburbanization has also led to a more pronounced social segmentation. More residents of Megalopolis live in separated suburbs.

New areas of population growth emerged, especially in southern Maryland and northern Virginia. This is a big change from Gottmann's time, and offers new insight into the nation's global importance. Gottmann (1961: 29) observed that, 'the most sticking feature of population distribution within and around Megalopolis is the thinning out of density on the mountain fringe to the northwest and in Virginia south of the Washington metro area. On the whole, the densities are more continuously high from Pennsylvania to Massachusetts than south of the Mason and Dixon line'. This southern growth of Megalopolis is a local consequence of the rise of the military–scientific–industrial complex. The long postwar rise of the US to global dominance is embodied in the population and economic growth of the Washington metropolitan area.

As with the US economy, the postindustrial shift from manufacturing to services is the general pattern within Megalopolis. It is characterized by the loss of manufacturing jobs, especially in the central cities, and the large cities as the main attraction for producer services. This economic change has discernible consequences for blue-collar workers, especially those in the central city who have seen their job opportunities disappear and their bargaining position in the labor market weakened. For those trapped in the central city, the suburbanization of jobs has been particularly disadvantageous. Manufacturing job loss is dramatic, especially in the central cities, while the producer services sector has emerged as an important economic activity.

The whole of Megalopolis became more multiracial and multiethnic from 1960 to 2000. During that period, the White and Asian populations became especially more

suburban, settling outside central cities. As with other urbanized areas of the US, segregation by race and ethnicity remains a significant element in the social geography of Megalopolis. This segregation is not innocent of wider implications in terms of access to jobs, quality of schooling and the ability of political jurisdictions to fiscally respond to social issues and problems.

Over the past 50 years, Megalopolis has evolved into a complex region of diverse urban places. Our PCA of 2000 census place data allowed us to identify a finer grained difference within Megalopolis. There are five distinct trends. First, economic power is the largest explanatory factor for variation among urban places in Megalopolis. Wealth and education, or the lack of them, are paramount in the creation of the urban social landscape. Second, the identification of places with poverty suggests that there is increasing polarization between not only central city and suburban cores, but also within suburban areas. Third, because the Megalopolis region has experienced the return of mass immigration not witnessed in over a century, immigrant gateways can be identified in both central areas and suburban places. Fourth, there is evidence of decline in 'first-tier' or 'inner-ring' suburbs. The housing stock has aged along with the local residents, and many of these places are suffering. Inner suburban decline juxtaposed against the growth of the outer suburbs acts as the visible evidence of suburban restructuring in this giant urban region. Fifth, the development of places for a Black middle class is a distinguishing characteristic of Megalopolis. The emergence of a large Black middle class population became manifest in 2000. This pattern is particularly evident in the suburbs of the Baltimore and Washington, DC metropolitan areas, where public sector employment opportunities are abundant.

In this article, we analyzed broad scale population and economic trends, identified principal sources of urban social variation, and created a typology of clusters of urban places to identify the internal processes of socioeconomic change in a large city region. Future work should flesh out more fully the impacts of urban restructuring in these different urban places as well as use theorized case studies to identify the trajectory of different neighborhoods within each cluster.

Here, we examined census place level geography, but more research is needed at the neighborhood level. More generally, our reexamination of Megalopolis 50 years on has important implications for the testing of theories of urban change. We have few analytical studies of urban regions over such a long time span. The theorization of the links between the city and economic and cultural globalization has been based on the experience of very few cities over a few decades at most. Los Angeles, for example, has been identified by the LA School as the unique site of new forms of postmodernity, and its pattern of development put forth as a model for other cities (Dear, 2001; Keil, 1998; Scott and Soja, 1996). The building of metatheories precariously balanced on just recent changes in a narrow range of cities, or in this example just one city, is unlikely to lead to a nuanced understanding of the variation and complexity of urban change around the world. There are few benchmark studies in social science that allow a reexamination of such a rapidly changing urban environment. The Gottmann base study thus provides an invaluable datum point from which the pace of change can be calibrated. Megalopolis still serves as an ideal research laboratory to identify the dynamics of metropolitan change.

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Résumé

Il s'agit ici de revenir sur Mégalopolis 50 ans après l'étude majeure de Gottmann sur la région la plus urbanisée du littoral Est des Etats-Unis. Son étude procure un point de départ inestimable utilisé ici comme référence à partir de laquelle rééxaminer les transformations socio-spatiales d'une région métropolitaine. Dans un premier temps, ce travail redéfinit Mégalopolis et présente les grandes tendances à la concentration depuis 1950. Il analyse ensuite 39 variables choisies, portant sur les données de recensement des lieux par niveau (2.353 lieux traités), afin d'effectuer une analyse en composantes principales (PCA). Celle-ci montre que Mégalopolis demeure un nœud important pour la population et l'activité économique nationales. Un demi-siècle de restructuration urbaine met en évidence que, à cause des forces de décentralisation urbaine, la région est devenue une agglomération aux banlieues plus étendues. Il se dégage un schéma socioéconomique complexe propre à une vaste zone urbaine structurée par classe, niveau d'éducation, type de jouissance du logement, ancienneté des habitations, ainsi que par race et ethnicité. Une analyse des pôles (clusters) révèlent cinq pôles de lieux urbains repérés par l'analyse PCA: 'lieux aisés', 'lieux pauvres', 'lieux pour classes moyennes noires', 'lieux d'entrée des immigrants', et 'lieux pour Américains moyens'.