

Transportation and Urban Form

Stages in the Spatial Evolution of the American Metropolis

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As the opening chapter demonstrated, the movement of people, goods, and information within the local metropolitan area is critically important to the functioning of cities. In this chapter, I review the U.S. urban experience of the past two centuries and trace a persistently strong relationship between the intraurban transportation system and the spatial form and organization of the metropolis. Following an overview of the cultural foundations of urbanism in the United States, I introduce a four-stage model of intrametropolitan transport eras and associated growth patterns. Within that framework it will become clear that a distinctive spatial structure dominated each stage of urban transportation development and that geographical reorganization swiftly followed the breakthrough in movement technology that launched the next era of metropolitan expansion.¹ Finally, I briefly consider the contemporary scene, both as an evolutionary composite of the past and as a dynamic arena in which new forces may already be forging a decidedly different future.

CULTURAL FOUNDATIONS OF THE U.S. URBAN EXPERIENCE

Americans, by and large, were not urban dwellers by design. The emergence of large cities between the Civil War and World War I was an unintended by-product of the nation's rapid industrialization. Berry (1975), recalling the observations of the 18th-century French traveler Hector St. Jean de Crèvecoeur, succinctly summarized the cultural values that have shaped attitudes toward urban living in the United States for the past two centuries:

Foremost . . . was a *love of newness*. Second was the overwhelming desire to be *near to nature*. *Freedom to move* was essential if goals were to be realized, and *individualism* was basic to the self-made man's pursuit of his goals, yet *violence* was the accompaniment if not the condition of success—the competitive urge, the struggle to succeed, the fight to win. Finally, [there is] a great *melting pot* of peoples, and a manifest *sense of destiny*. (p. 175)

As the indigenous culture of the emergent nation took root, its popular Jefferson-

nian view of democracy nurtured a powerful rural ideal that regarded cities as centers of corruption, social inequalities, and disorder. When mass urbanization became unavoidable as the Industrial Revolution blossomed after 1850, Americans brought their agrarian ideal with them and sought to make their new manufacturing centers noncities. For the affluent, this process began almost as soon as the railroad reached the city in the 1830s; by midcentury, numerous railside residential clusters had materialized just outside the built-up urban area. But middle-income city dwellers could not afford this living pattern because of the extra time and travel costs it demanded. With cities becoming increasingly unlivable as industrialization intensified, pressures mounted after 1850 to improve the urban transportation system to permit the burgeoning middle class to have access to the high-amenity environment of the periurban zone.

The necessary technological breakthrough—in the form of the electric (streetcar) traction motor—was finally achieved in the late 1880s. By the opening of the final decade of the 19th century, the city began to spill over into the much-desired surrounding countryside. By 1900, the decentralization of the middle-income masses was no longer a trickle but a widening migration stream (which has yet to cease its flow) that rapidly spawned the emergence of the full-fledged metropolis, wherein a steadily increasing multitude of urban dwellers shunned the residential life of the industrial city altogether. Hardly had this initial transformation of the U.S. city been completed when the automobile introduced mass private transportation in the 1920s for all but the poorest urban dwellers. As the intrametropolitan highway network expanded in the interwar period, successive rounds of new peripheral residential development were launched, and the urban perimeter was pushed ever farther from the downtown core. But these centrifugal forces still operated at a rather leisurely

pace, undoubtedly slowed after 1930 by a decade and a half of economic depression and global war.

Following the conclusion of World War II, however, all constraints were removed, and a massive new wave of deconcentration was triggered. Spurred by a reviving economy, widespread housing demands, federal home loan policies that favored new urban development, copious highway construction, and more efficient cars, the exodus from the nation's cities reached unprecedented proportions between 1945 and 1970. The proliferation of urban freeways (introduced in Southern California in the late 1930s) heightened the centrifugal drift. With the completion of these high-speed, limited-access, superhighway networks in the 1960s and 1970s came the elimination of the core-city central business district's (CBD's) regionwide centrality advantage, as superior intrametropolitan accessibility became a ubiquitous spatial good available near any expressway interchange location. As entrepreneurs swiftly realized the consequences of this structural reorganization of the metropolis, nonresidential activities of every variety began their own massive wave of intraurban deconcentration. Manufacturing and retailing led the way.

By 1980, the erstwhile ring of bedroom communities that girdled the aging central city had become transformed into a diversified, expanding *outer city* that was increasingly home to a critical mass (i.e., more than half) of the metropolitan area's industrial, service, and office-based business employers. Moreover, major new multipurpose activity centers have been emerging in the outer city during the past three decades, attracting so many high-order urban functions that residents of surrounding areas have completely reorganized their lives around them. Thus the compact industrial city of the recent past has today turned inside-out. The rise of downtown-type centers in the increasingly independent outer city has also forged a decidedly polycentric metropolis, the product of both the cumu-

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lative spatial processes outlined above and the emerging forces of a postindustrial society that are shaping new urbanization patterns that represent a clean break with the past.

The legacy of more than two centuries of intraurban transportation innovations and the development patterns they etched on the landscape of metropolitan America is *suburbanization*—the growth of the edges of the urbanized area at a rate faster than that in the already developed interior. Since the spatial extent of the continuously built-up urban area has, throughout history, exhibited a fairly constant time–distance radius of about 45 minutes' travel from the center, each breakthrough in higher-speed transport technology extended that radius into a new outer zone of suburban residential opportunity. In the 19th century, commuter railroads, horse-drawn trolleys, and electric streetcars each created their own suburbs—and thereby also created the large industrial city, which could not have been formed without absorbing these new suburbs into the pre-existing compact urban center. But the suburbs that developed in the early 20th century began to assert their independence from the enlarged, ever more undesirably perceived central cities. Few significant municipal consolidations occurred after the 1920s, except in postwar Texas and certain other Sunbelt locales (a trend that ended during the 1980s). As the automobile greatly reinforced the intraurban dispersal of population, the distinction between central city and suburban ring grew as well. And as freeways greatly reduced the friction effects of intrametropolitan distance for most urban functions, nonresidential activities deconcentrated to such an extent that by the mid-1970s the emerging outer city became at least the coequal of the neighboring central city that spawned it—making the word *suburb* an oxymoron.

This urban experience of the United States over the past two centuries is the product of uniquely U.S. cultural values and contrasts sharply with modern urbanization

trends in Europe. The European metropolis, though also now experiencing decentralization, retains a more tightly agglomerated spatial structure, and the historic central city continues to dominate its immediate urban region. Sommers (1983) has summarized the concentrative forces that have shaped the cities of postwar Europe:

Age is a principal factor, but ethnic and environmental differences also play major roles in the appearance of the European city. Politics, war, fire, religion, culture, and economics also have played a role. Land is expensive due to its scarcity, and capital for private enterprise development has been insufficient, so government-built housing is quite common. Land ownership has been fragmented over the years due to inheritance systems that often split land among sons. Prices for real estate and rent have been government controlled in many countries. Planning and zoning codes as well as the development of utilities are determined by government policies. These are characteristics of a region with a long history, dense population, scarce land, and strong government control of urban land development. (p. 97)

Further evidence of the persistent dominance of the European central city is shown in Figure 3.1. The density gradient pattern of the North American metropolis (Figure 3.1A) is marked by progressive deconcentration, whereas the counterpart European pattern (Figure 3.1B) exhibits sustained intraurban centralization. The newest metropolitan trends of the past decade in Europe do show accelerating suburbanization, but the central city remains the intraurban social and economic core.

THE FOUR ERAS OF INTRAMETROPOLITAN GROWTH AND TRANSPORT DEVELOPMENT

The evolving form and structure of the U.S. metropolis, briefly outlined in the previous section, may be traced within the frame-

work of four transportation-related eras identified by Adams (1970). Each growth stage is dominated by a particular movement technology and network expansion process that shaped a distinctive pattern of intraurban spatial organization:

1. Walking-Horsecar Era (1800–1890)
2. Electric Streetcar Era (1890–1920)
3. Recreational Automobile Era (1920–1945)
4. Freeway Era (1945–present)

This model, diagrammed in Figure 3.2, reveals two sharply different morphological properties over time. During Eras 1 and 3 uniform transport surface conditions prevailed (as much of the urban region was similarly accessible), permitting directional freedom of movement and a decidedly compact overall development pattern. During Eras 2 and 4 pronounced network biases were dominant, producing an irregularly shaped metropolis in which axial development along radial transport routes overshadowed growth in the less inaccessible interstices.

A generalized model of this kind, while organizationally convenient, risks oversimplification because the building processes of

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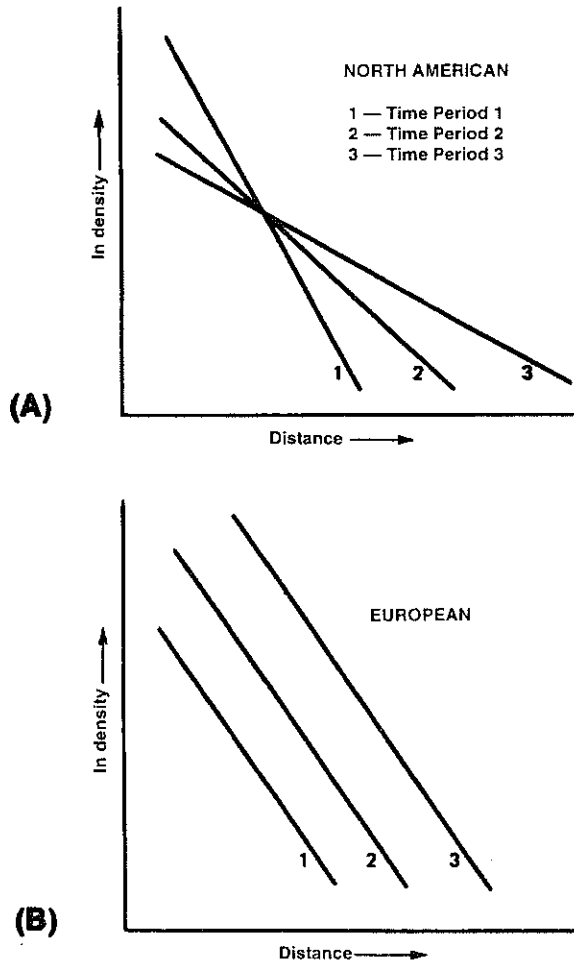


FIGURE 3.1. Density gradients over time in the North American and European metropolis. Source: Hartshorn (1992, p. 230). Copyright 1992 by John Wiley & Sons. Reprinted by permission.

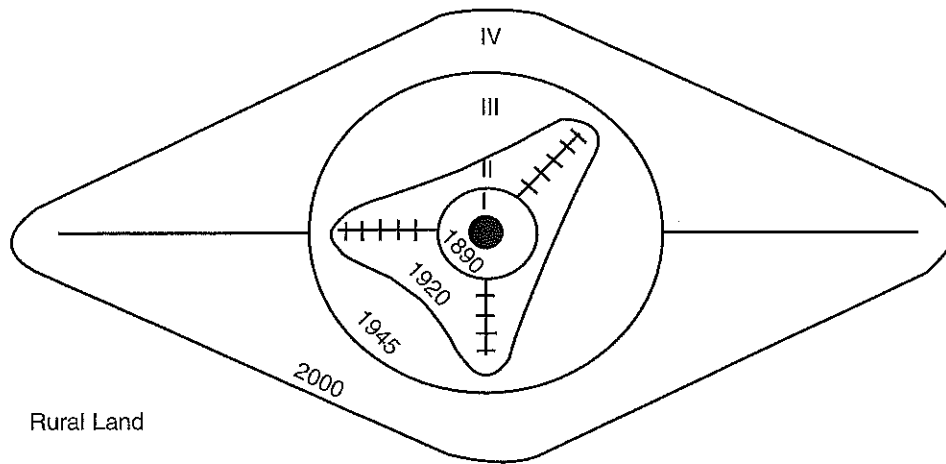


FIGURE 3.2. Intraurban transport eras and metropolitan growth patterns: (I) Walking-Horsecar Era, (II) Electric Streetcar Era, (III) Recreational Auto Era, and (IV) Freeway Era. Source: Adams (1970, p. 56). Copyright 1970 by The Association of American Geographers. Adapted by permission.

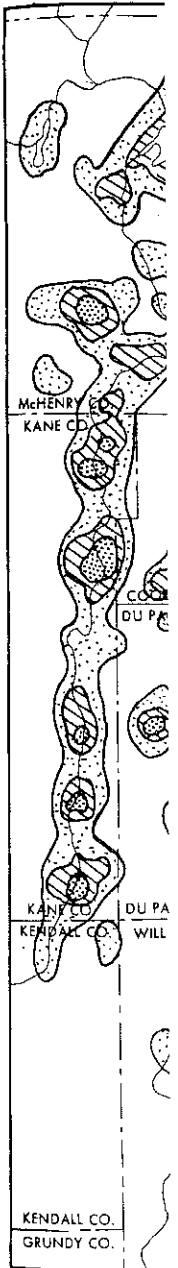


FIGURE 3.3. Source: Berry

several simultaneously developing cities do not fall into neat time-space compartments (Tarr, 1984, pp. 5-6). An examination of Figure 3.3, which maps Chicago's growth for the past 150 years, reveals numerous empirical irregularities, suggesting that the overall urban growth pattern is somewhat more complex than a simple, continuous,

centrifugal thrust. Yet, when developmental ebb-and-flow pulsations, leapfrogging, back-filling, and other departures from the normative scheme are considered, there still remains a reasonably good correspondence between the model and historical-geographical reality. With that in mind, each of the four eras is now examined in detail.

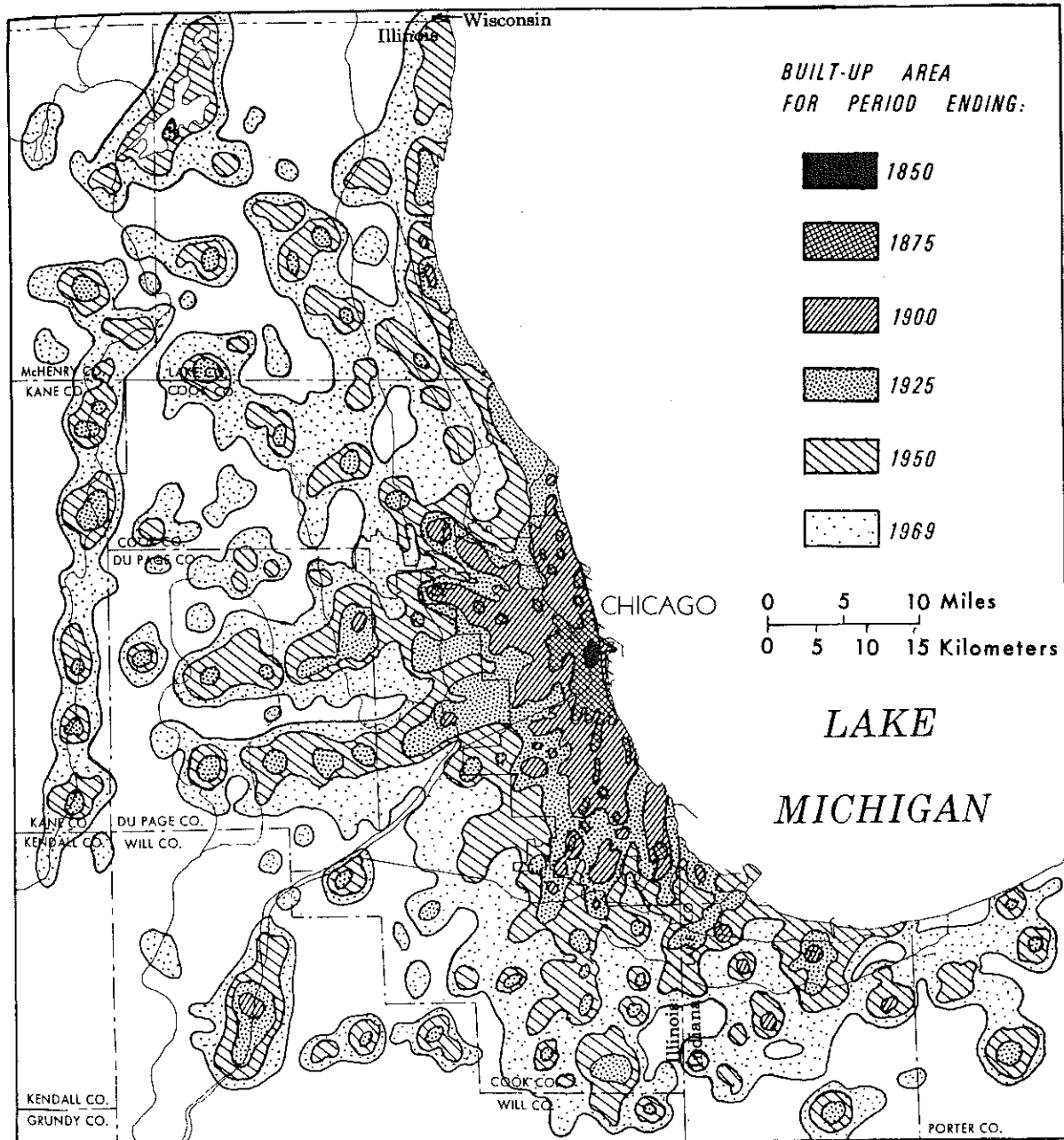


FIGURE 3.3. The suburban expansion of metropolitan Chicago from the mid-19th century through 1970. Source: Berry et al. (1976, p. 9). Copyright 1976 by B. J. L. Berry. Reprinted by permission.

Walking-Horsecar Era (1800–1890)

Prior to the middle of the 19th century, the U.S. city was a highly agglomerated urban settlement in which the dominant means of getting about was on foot (Figure 3.2, Era I). Thus people and activities were required to cluster within close proximity of one another. Initially, this meant less than a 30-minute walk from the center, later extended to about 45 minutes when the pressures of industrial growth intensified after 1830. Any attempt to deviate from these mobility constraints courted urban failure: Washington, D.C., struggled enormously for much of its first century on L'Enfant's 1791 plan that dispersed blocks and facilities too widely for a pedestrian city, prompting Charles Dickens to observe during his 1842 visit that buildings were located "anywhere, but the more entirely out of everyone's way the better" (Schaeffer & Sclar, 1975, p. 12).

Within the walking city, there were recognizable concentrations of activities as well as the beginnings of income-based residential congregations. The latter behavior was clearly evinced by the wealthy, who walled themselves off in their larger homes near the city center; they also favored the privacy of horse-drawn carriages to move about town—undoubtedly the earliest U.S. form of wheeled intraurban transportation. The rest of the population resided in tiny overcrowded quarters, of which Philadelphia's

now-restored Elfreth's Alley was typical (see Figure 3.4).

The rather crude environment of the compact preindustrial city impelled those of means to seek an escape from its noise as well as the frequent epidemics that resulted from the unsanitary conditions. Horse-and-carriage transportation enabled the wealthy to reside in the nearby countryside for the disease-prone summer months. The arrival of the railroad in the early 1830s soon provided the opportunity for year-round daily travel to and from elegant new trackside suburbs. By 1840 hundreds of affluent businessmen in Boston, New York, and Philadelphia were making these round-trips every weekday. The "commutation" of their fares to lower prices, when purchasing tickets in monthly quantities, introduced a new word to describe the journey to work: *commuting*. A few years later, these privileges extended to the nouveau riche professional class (well over 100 trains a day ran between Boston and its suburbs in 1850), and a spate of planned rail suburbs, such as Riverside near Chicago, soon materialized.

As industrialization and its teeming concentrations of modest, working-class housing increasingly engulfed the mid-19th-century city, the worsening physical and social environment heightened the desire of middle-income residents to suburbanize as well. For those unable to afford the cost and time of commuting—and with the pedes-

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FIGURE 3.4. Elfreth's Alley in the heart of downtown Philadelphia. Its restoration provides a good feel for the lack of spaciousness in the Revolution-era city. Photo courtesy of R. A. Cybriwsky.

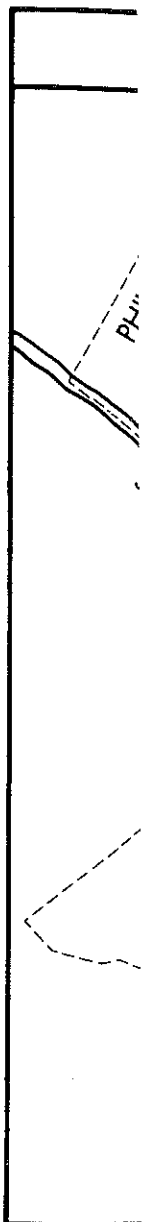


FIGURE 3.5. County. Source by permission.

trian city stretched to its morphological limit—these middle-class yearnings intensified the pressure to improve intraurban transport technology.

As early as the 1820s, New York, Philadelphia, and Baltimore had established *omnibus* lines. These intracity adaptations of the stagecoach eventually developed dense

networks in and around downtown (see Figure 3.5); other cities experimented with cable-car systems and even the steam railroad, but most efforts proved impractical. With omnibuses unable to carry more than a dozen or so passengers or to attain the speeds of people on foot, the first meaningful breakthrough toward establishing in-

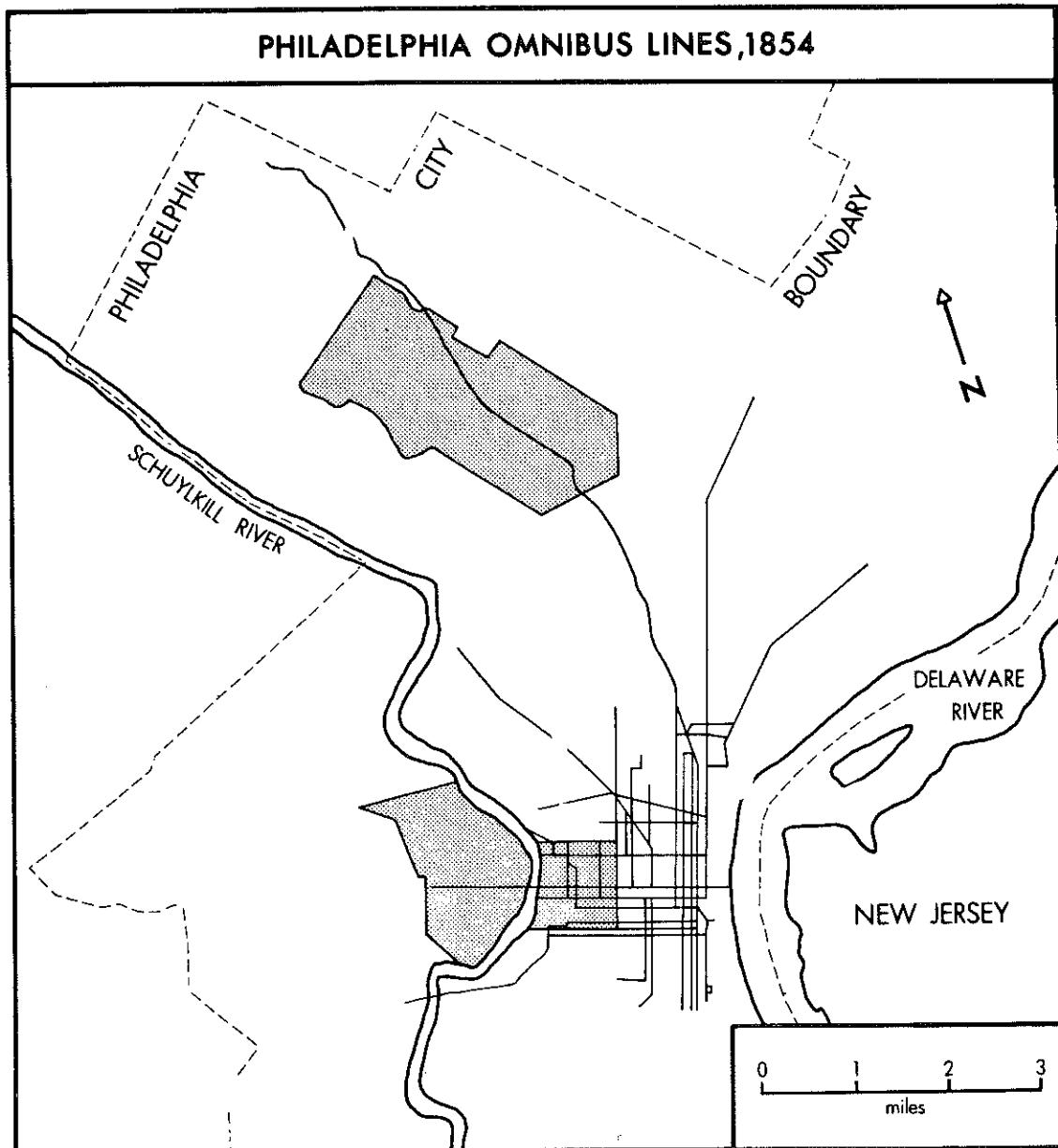


FIGURE 3.5. Philadelphia's omnibus routes in 1854, the year the city annexed all of surrounding Philadelphia County. Source: Miller (1982, p. 364). Copyright 1982 by The Association of American Geographers. Reprinted by permission.

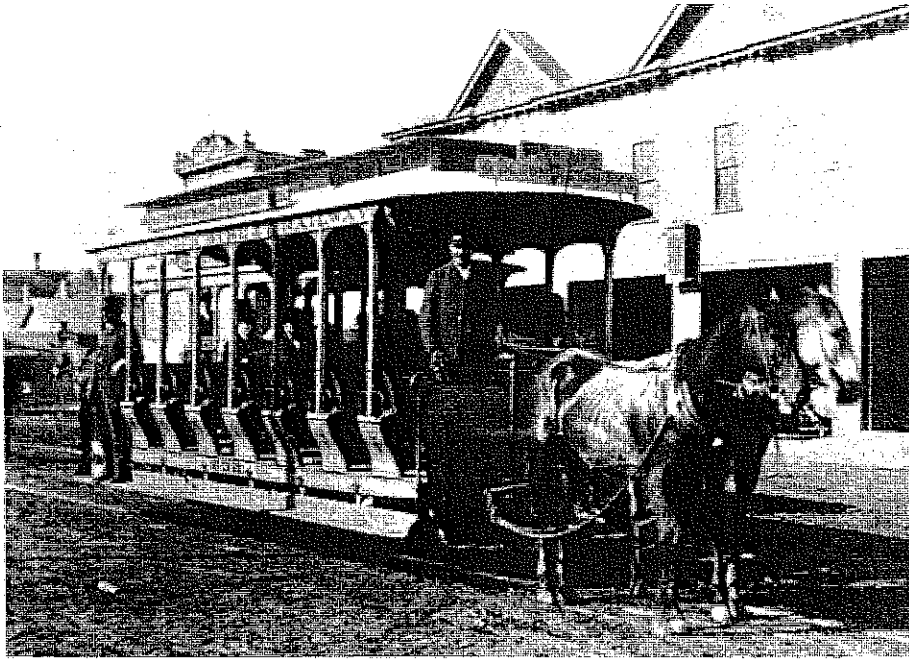


FIGURE 3.6. The horsecar introduced mass transportation to the teeming U.S. city. This dictograph was taken in downtown Minneapolis in the late 1880s. Source: Minnesota Historical Society.

tricity “mass” transit was finally introduced in New York City in 1852 in the form of the horse-drawn streetcar (see Figure 3.6). Lighter street rails were easy to install, overcame the problems of muddy unpaved roadways, and allowed horsecars to be hauled along them at speeds slightly faster (ca. 5 miles per hour) than those of pedestrians. This modest improvement in mobility allowed a narrow band of land at the city’s edge to be opened for new home construction. Middle-income urbanites flocked to these *horsecar suburbs*, which proliferated rapidly after 1860. Radial routes were usually the first to spawn such peripheral development, but the steady demand for housing required the construction of crosstown horsecar lines, thereby filling in the interstices and preserving the generally circular shape of the city.

The nonaffluent remainder of the urban population was confined to the old pedestrian city and its bleak, high-density, industrial appendages. With the massive influx of unskilled laborers, increasingly of European

origin after the Civil War, huge blue-collar neighborhoods surrounded the factories, often built by the mill owners themselves. Since factory shifts ran 10 or more hours 6 days a week, their modestly paid workers could not afford to commute and were forced to reside within walking distance of the plant. Newcomers to the city, however, were accommodated in this nearby housing quite literally in the order in which they arrived, thereby denying immigrant factory workers even the small luxury of living in the immediate company of their fellow ethnics. Not surprisingly, such heterogeneous residential patterning almost immediately engendered social stresses and episodic conflicts that persisted until the end of the century, when the electric trolley would at last enable the formation of modern ethnic neighborhood communities.

Toward the end of the Walking-Horsecar Era, the scale of the city was slowly but inexorably expanding. One by-product was the emergence of the downtown central business district (CBD). As needs intensified

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for specialized commercial, retailing, and other services, it was quickly realized that they could best be provided from a single center at the most accessible urban location. With immigrants continuing to pour into the all-but-bursting industrial city in the late 19th century, pressures redoubled to improve intraurban transit and open up more of the adjacent countryside.

In retrospect, horsecars had only been a stopgap measure, relieving overcrowding temporarily but incapable of bringing enough new residential space within the effective commuting range of the burgeoning middle class. The hazards of relying on horses for motive power were also becoming unacceptable. Besides high costs and the sanitation problem, disease was an ever-present threat—for example, thousands of horses succumbed in New York and Philadelphia in 1872 when respiratory illnesses swept through the municipal stables (Schaeffer & Sclar, 1975, p. 22). By the late 1880s that desperately needed transit revolution was at last in the making. When it came, it swiftly transformed both city and suburban periphery into the modern metropolis.

The Electric Streetcar Era (1890–1920)

The key to the first urban transport revolution was the invention of the electric traction motor by one of Thomas Edison's technicians, Frank Sprague. This innovation surely must rank among the most important in U.S. history. The first electric trolley line opened in Richmond, Virginia, in 1888, was adopted by two dozen other major cities within a year, and by the early 1890s was the dominant mode of intraurban transit. The rapidity of the diffusion of this innovation was enhanced by the immediate recognition of its ability to mitigate the urban transportation problems of the day: motors could be attached to existing horsecars to convert them into self-propelled vehicles,

powered via easily constructed overhead wires. Accordingly, the tripling of average speeds (to over 15 miles per hour) now brought a large band of open land beyond the city's perimeter into trolley-commuting range.

The most dramatic impact of the Electric Streetcar Era was the swift residential development of those urban fringes, which expanded the emerging metropolis into a decidedly star-shaped spatial entity (Figure 3.2, Era II). This morphological pattern was produced by radial trolley corridors extending several miles beyond the compact city's limits; with so much new space available for home building within easy walking distance of these trolley lines, there was no need to extend trackage laterally. Consequently, the interstices remained undeveloped.

The typical "streetcar suburb" around the turn of the 20th century was a continuous corridor whose backbone was the road carrying the trolley tracks (usually lined with stores and other local commercial facilities), from which gridded residential streets fanned out for several blocks on both sides of the tracks. This spatial framework is illustrated in Figure 3.7, whose map reconstructs street and property subdivision in a portion of streetcar-era Cambridge, Massachusetts, just outside Boston. By 1900, most of the open spaces between these streets were themselves subdivided into small rectangular lots that contained modest single-family houses.

In general, the quality of housing and prosperity of streetcar suburbs increased with distance from the central-city line. As Warner (1962) pointed out in his classic study, however, these continuous developments were home to a highly mobile middle-class population, finely stratified according to a plethora of minor income and status differences. With frequent upward (and local spatial) mobility the norm, community formation became an elusive goal, a process further inhibited by the relentless grid-settlement morphology and the heavy dependence on distant downtown for em-

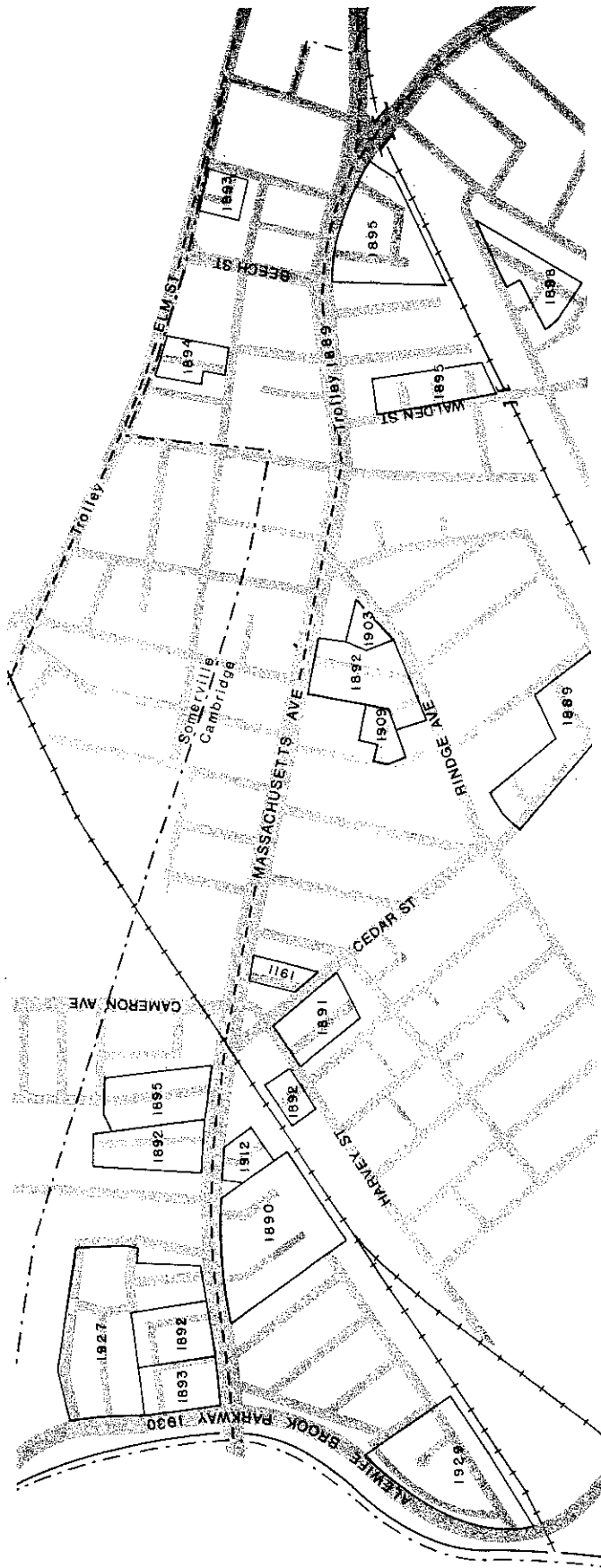


FIGURE 3.7. Streetcar subdivisions outside Boston in North Cambridge, Massachusetts, 1890–1930. Source: Krim et al. (1977, p. 44). Copyright 1977 by the Cambridge Historical Commission. Reprinted by permission.

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ployment and most shopping. As Warner put it so aptly, this kind of a society generated “not integrated communities arranged about common centers, but a historical and accidental traffic pattern” (1962, p. 158).

The desire to exclude the working class also shaped the social transportation geography of suburban streetcar corridors. “Definitional” conflicts usually revolved around the entry of saloons, with middle-income areas voting to remain “dry” while the blue-collar mill towns of lower status trolley and intercity rail corridors chose to go “wet” (Schwartz, 1976, pp. 13–18). Within the city, too, the streetcar sparked a spatial transformation. The ubiquity and low fare of the electric trolley now provided every resident access to the intracity circulatory system, thereby introducing truly *mass* transit to urban America in the closing years of the 19th century. For nonresidential activities, this new ease of movement among the city’s various parts quickly triggered the emergence of specialized land use districts for commerce, industry, and transportation as well as the continued growth of the multipurpose CBD—now abetted by the elevator, which permitted the construction of much taller buildings. But the widest impact of the streetcar was on the central city’s social geography, because it made possible the congregation of ethnic groups in their own neighborhoods. No longer were these moderate-income masses forced to reside in the heterogeneous jumble of rowhouses and tenements that ringed the factories. The trolley brought them the opportunity to “live with their own kind,” enabling the sorting of discrete groups into their own inner-city social territories within convenient and inexpensive travel distance of the workplace.

The latter years of the Electric Streetcar Era also witnessed additional breakthroughs in public urban rail transportation. The faster electric commuter train superseded steam locomotives in the wealthiest suburban corridors, which had resisted the middle-class incursions of the streetcar sec-

tors because the rich always seek to preserve their social distance from those of lesser status. In some of the newer metropolises that lacked the street-rail legacy, heavier electric railways became the cornerstone of the movement system; Los Angeles is the outstanding example, with the interurban routes of the Pacific Electric network (Figure 3.8) spawning a dispersed settlement fabric in preautomobile days, and many lines forging rights-of-way that were later upgraded into major boulevards and even freeways (see Banham, 1971, pp. 32–36). Finally, within the city proper elevated (“els”) and underground rapid transit lines (subways) made their appearances, the “El” in New York as early as 1868 (using steam engines—the electric elevated was born in Chicago in 1892) and the subway in Boston in 1898. Such rapid transit was always enormously expensive to build and could be justified only in the largest cities that generated the highest traffic volumes. Therefore, els and subways were restricted to New York, Boston, Philadelphia, and Chicago, and most construction concluded by the 1920s. Rapid-transit-system building did not resume until the 1960s with metropolitan San Francisco’s Bay Area Rapid Transit (BART) network, followed in the 1970s and 1980s by projects in Cleveland, Washington, D.C., Atlanta, Baltimore, Miami, and Los Angeles.

The Recreational Automobile Era (1920–1945)

By 1920, the electric trolleys, trains, interurbans, els, and subways had transformed the tracked city into a full-fledged metropolis whose streetcar suburbs and mill-town intercity rail corridors, in the largest cases, spread out to encompass an urban complex more than 20 miles in diameter. It was at this point in time, many geographers and planners would agree, that intrametropolitan transportation achieved its greatest level of efficiency—that the burgeoning city truly “worked.” How much closer the U.S. me-

tropolis might have approached optimal workability for all its millions of residents, however, shall never be known because the second urban transportation revolution was already beginning to assert itself through the increasingly popular automobile.

Whereas many scholars have vilified the automobile as the destroyer of the city, Americans took to cars as completely and wholeheartedly as they did to anything in the nation's long cultural history. More balanced assessments of the role of the automobile (see, e.g., Bruce-Briggs, 1977) recognize its overwhelming acceptance for what it was: the long-hoped-for attainment of private transportation that offered users almost total freedom to travel whenever and wherever they chose. Cars came to the metropolis in ever greater numbers throughout the interwar period, a union culminating in accelerated deconcentration—through the development of the bypassed streetcar-era interstices and the pushing of the suburban frontier farther into the countryside—to produce once again a compact, regular-shaped urban entity (Figure 3.2, Era III).

Although it came to have a dramatic impact on the urban fabric by the eve of World War II, the automobile was introduced into the U.S. city in the 1920s and 1930s at a leisurely pace. The first cars had appeared in both Western Europe and the United States in the 1890s, and the wealthy on both sides of the Atlantic quickly took to this innovation because it offered a better means of personal transport. It was Henry Ford, however, with his revolutionary assembly-line manufacturing techniques, who first mass-produced cars; the lower selling prices soon converted them from the playthings of the rich into a transport mode available to a majority of Americans. By 1916, over 2 million autos were on the road, a total that quadrupled by 1920 despite wartime constraints. During the 1920s, the total tripled to 23 million and increased another 4½ million by the end of the depression-plagued 1930s; passenger car registrations paralleled these increases (Fig-

ure 3.9). The earliest flurry of auto adoptions had been in rural areas, where farmers badly needed better access to local service centers; accordingly, much of the early paved-road construction effort was concentrated in rural America. In the cities, cars were initially used for weekend outings—hence the *Recreational Auto Era*—and some of the first paved roadways built were landscaped parkways that followed scenic waterways (such as New York's Bronx River Parkway, Chicago's Lake Shore Drive, and the East and West River Drives along the Schuylkill in Philadelphia's Fairmount Park).

In the suburbs, however, where the overall growth rate now for the first time exceeded that of the central cities, cars were making a decisive penetration throughout the economically prosperous 1920s. Flink (1975, p. 14) reported that, as early as 1922, 135,000 suburban dwellings in 60 metropolises were completely dependent on motor vehicles. In fact, the subsequent rapid expansion of automobile suburbia by 1930 so adversely affected the metropolitan public transportation system that, through significant diversions of streetcar and commuter-rail passengers, the large cities started to feel the negative effects of the car years before accommodating to its actual arrival. By encouraging the opening of unbuilt areas lying between suburban rail axes, the automobile effectively lured residential developers away from densely populated traction-line corridors into the now-accessible interstices. Thus the suburban home-building industry no longer found it necessary to subsidize privately owned streetcar companies to provide cheap access to their trolley-line housing tracts.

Without this financial underpinning, the modern urban transit crisis soon began to surface. Traction companies, obliged under their charters to provide good-quality service, could not raise fares to the level necessary to earn profits high enough to attract new capital in the highly competitive money markets. As this economic squeeze

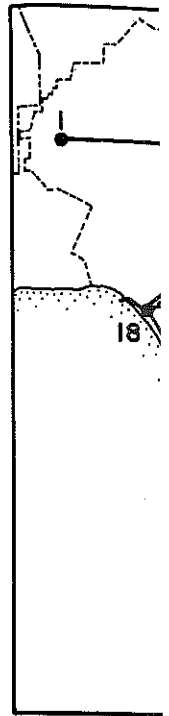


FIGURE 3.8
mid-1920s. Streetcar gauge streetcar follows: (1) C Glendora; (8) Newport; (14) Steiner (1981).

FIGURE 3.9
United States (1920-1930)

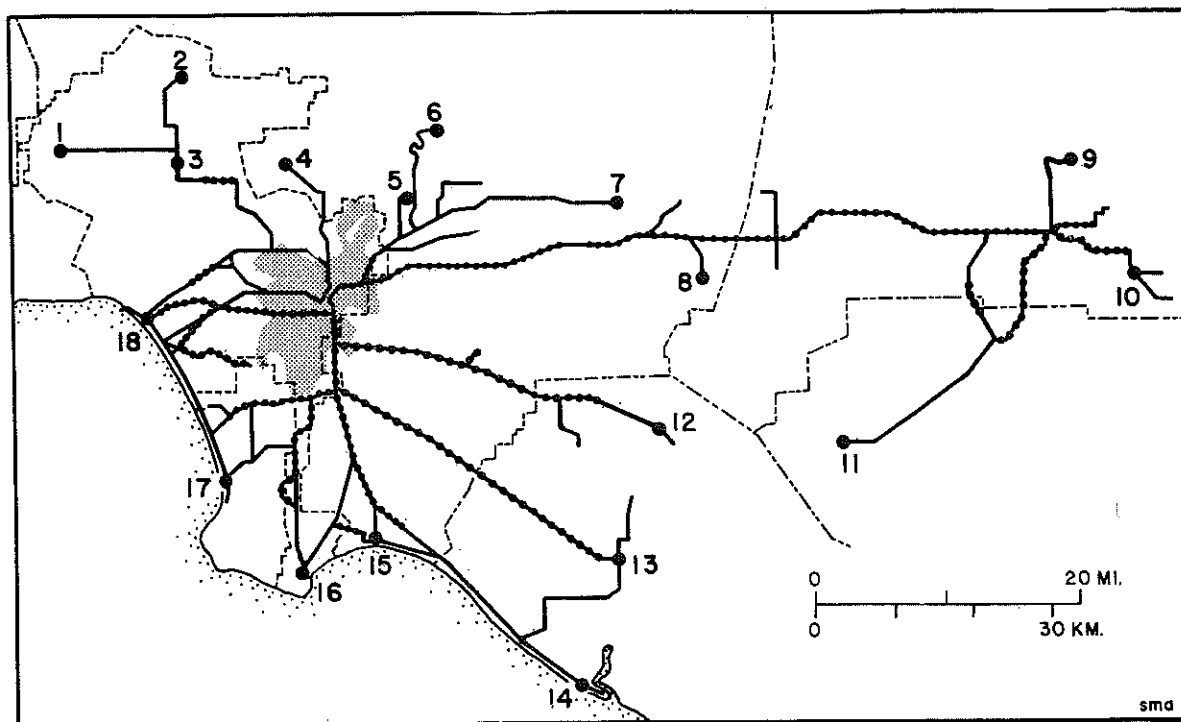


FIGURE 3.8. Interurban railway routes of the Pacific Electric system at their greatest cumulative extent in the mid-1920s. Shading denotes portions of central Los Angeles that were situated within a half-mile of narrow-gauge streetcar lines in the early 1920s. Selected interurban destinations are numbered in clockwise sequence as follows: (1) Canoga Park; (2) San Fernando; (3) Van Nuys; (4) Burbank; (5) Pasadena; (6) Mount Lowe; (7) Glendora; (8) Pomona; (9) Arrowhead Springs; (10) Redlands; (11) Corona; (12) Yorba Linda; (13) Santa Ana; (14) Newport Beach; (15) Long Beach; (16) San Pedro; (17) Redondo Beach; and (18) Santa Monica. Source: Steiner (1981, p. 95). Copyright 1981 by Kendall/Hunt. Reprinted by permission.

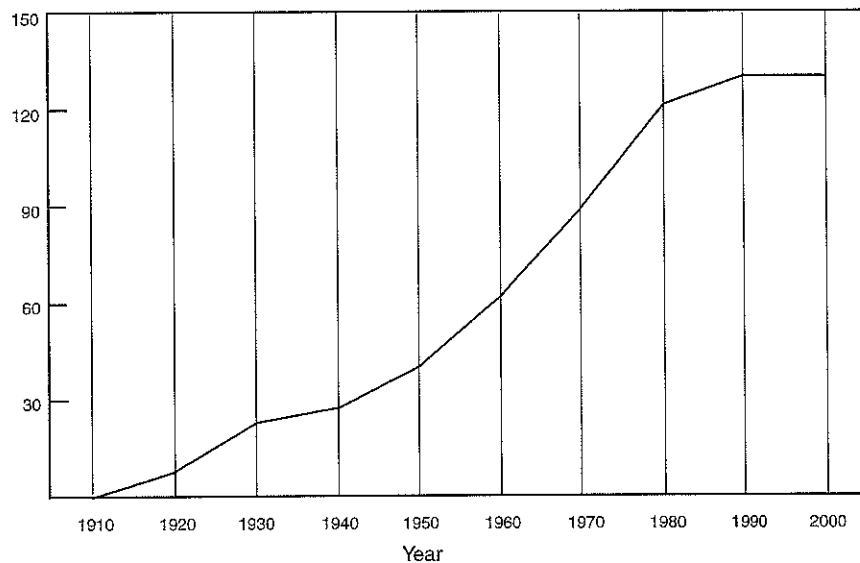


FIGURE 3.9. Passenger car registrations in the United States, 1910–2000. Source: *Statistical Abstract of the United States* (various years).

intensified, particularly during the Great Depression of the 1930s, local governments were forced to intervene with subsidies from public funds; eventually, as transit ridership continued to decline in the post-war period, local governments assumed ownership of transit companies when lines could not be closed down without harming communities. Several additional factors also combined to accelerate the interwar deterioration of the superlative trolley-era metropolitan transit network: the growing intra-suburban dispersal of population that no longer generated passenger volumes great enough to support new fixed-route public transportation facilities; dispersion of employment sites within the central city, thereby spreading out commuter destinations as well as origins; shortening of the work week from 6 to 5 days; worsening street congestion where trolleys and auto traffic increasingly mixed; and the pronounced distaste for commuting to the city by bus, a more flexibly routed new transit mode that never caught on in the suburbs.

Ironically, recreational motorways helped to intensify the decentralization of the urban population. Most were radial highways that penetrated deeply into the suburban ring; those connecting to major new bridges and tunnels—such as the Golden Gate and Bay Bridges in San Francisco, the George Washington Bridge and the Holland and Lincoln Tunnels in New York—usually served to open empty outer metropolitan sectors. Sunday motorists, therefore, had easy access to this urban countryside and were captivated by what they saw. They responded in steadily increasing numbers to the homesales pitches of developers who had shrewdly located their new tract housing subdivisions beside the suburban highways. As more and more city dwellers relocated to these automobile suburbs, by the end of the interwar era many recreational parkways were turning into heavily traveled commuter thoroughfares—especially near New York City, where the suburban parkway network devised by planner Robert Moses reached far

into Westchester County and Long Island, and in the Los Angeles Basin, where the first “freeway” (the Arroyo Seco, now called the Pasadena) was opened in 1940.

The residential development of automobile suburbia followed a simple formula that was devised in the prewar years and perfected and greatly magnified in scale in the decade after 1945. The leading motivation was developer profit from the quick turnover of land, which was acquired in large parcels, subdivided, and auctioned off. Accordingly, developers much preferred open areas at the metropolitan fringe where large packages of cheap land could readily be assembled. As the process became more sophisticated in the 1940s, developer-builders came to the forefront and produced huge complexes of inexpensive housing—with William J. Levitt and his Levittowns in the vanguard. Silently approving and underwriting this uncontrolled spread of residential suburbia were public policies at all levels of government that included the financing of highway construction, obligating lending institutions to invest in new home building, insuring individual mortgages, and providing low-interest loans to Federal Housing Administration (FHA) and Veterans Administration (VA) clients.

Although the conventional wisdom view of U.S. suburbanization holds that most of it occurred after World War II, longitudinal demographic data indicate that intrametropolitan population decentralization had achieved sizeable proportions during the interwar era. Table 3.1 reveals that suburban growth rates began to surpass those of the central cities as early as the 1920s, and that after 1930 the outer ring took a commanding lead (which has not ceased widening to this day). With an ever larger segment of the urban population residing in automobile suburbs, their spatial organization was already forming the framework of contemporary metropolitan society. Because automobility removed most of the preexisting movement constraints, suburban social geography now became dominated by lo-

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TABLE 3.1. Intrametropolitan Population Growth Trends, 1910–1960

| Decade | Central-city growth rate | Suburban growth rate | Percent total SMSA ^a growth in suburbs | Suburban growth per 100 increase in central-city population |
|-----------|--------------------------|----------------------|---|---|
| 1910–1920 | 27.7 | 20.0 | 28.4 | 39.6 |
| 1920–1930 | 24.3 | 32.3 | 40.7 | 68.5 |
| 1930–1940 | 5.6 | 14.6 | 59.0 | 144.0 |
| 1940–1950 | 14.7 | 35.9 | 59.3 | 145.9 |
| 1950–1960 | 10.7 | 48.5 | 76.2 | 320.3 |

^aSMSA, Standard Metropolitan Statistical Area, constituted by the central city and county-level political units of the surrounding suburban ring.
Source: U.S. Census of Population.

cally homogeneous income-group clusters that isolated themselves from dissimilar neighbors. Gone was the highly localized stratification of streetcar suburbia; in its place arose a far more dispersed, increasingly fragmented residential mosaic that builders were only too happy to cater to, helping shape this kaleidoscopic settlement pattern by constructing the most expensive houses that could be sold in each locality.

The long-standing partitioning of suburban social space was further legitimized by the widespread adoption of zoning (legalized in 1916). This legal device gave municipalities control of lot and building standards, which, in turn, assured dwelling prices that would only attract newcomers whose incomes at least equaled those of the existing population. For the middle class, especially, such exclusionary economic practices were enthusiastically supported because it now extended to them the capability that upper-income groups had enjoyed to maintain their social and geographic distance from people of lower socioeconomic status.

Nonresidential activities were also suburbanizing at a steadily increasing rate during the Recreational Auto Era. Indeed, many large-scale manufacturers had decentralized during the previous streetcar era, choosing suburban freight-rail locations that rapidly spawned surrounding working-

class towns. These industrial suburbs became important satellites of the central city in the emerging metropolitan constellation (see Taylor, 1915/1970). The economic geography of the interwar era reflected an intensification of this trend, as shown in the curves of activity gradients in Figure 3.10. Industrial employers accelerated their intra-urban deconcentration in this period as more efficient horizontal fabrication methods were replacing older techniques requiring multistoried plants—thereby generating greater space needs that were too expensive to satisfy in the high-density inner central city. Newly suburbanizing manufacturers, however, continued their spatial affiliation with intercity rail corridors, because motor trucks were not yet able to operate with their present-day efficiencies and the highway network of the outer ring remained inadequate until the 1950s.

The other major nonresidential activity of interwar suburbia was retailing. Clusters of automobile-oriented stores had first appeared in the urban fringes before World War I. By the early 1920s, the roadside commercial strip had become a common sight in many Southern California suburbs. Retail activities were also featured in dozens of planned automobile suburbs that sprang up in the 1920s, most notably in outer Kansas City's Country Club District where builder Jesse Clyde Nichols opened the nation's first

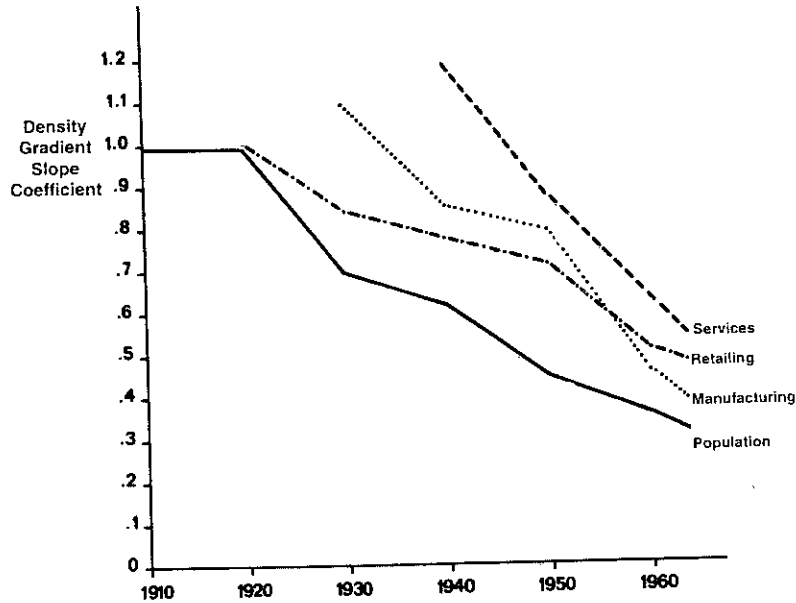


FIGURE 3.10. Intrametropolitan population and activity density gradients, 1910–1963. The lower the slope coefficient, the more dispersed the spatial distribution of an activity. Source: Mills (1970, p. 14). Copyright 1970 by *Urban Studies*. Reprinted by permission.

complete shopping center in 1922. But these diversified retail centers spread rather slowly before the 1950s; nonetheless, such chains as Sears & Roebuck and Montgomery Ward quickly discovered that stores situated alongside main suburban highways could be very successful, a harbinger of things to come in post-World War II metropolitan America.

The central city's growth reached its zenith in the interwar era and began to level off (Table 3.1) as metropolitan development after 1925 increasingly concentrated in the urban fringe zone that now widely resisted political unification with the city. Whereas the transit infrastructure of the streetcar era remained dominant in the industrial city (see Figure 3.11), the late-arriving automobile was adapted to this high-density urban environment as much as possible, but not without greatly aggravating existing traffic congestion.

The structure of the U.S. city during the second quarter of the 20th century was best summarized in the well-known *concentric-ring*, *sector*, and *multiple nuclei* models (re-

viewed in Harris & Ullman, 1945), which together described the generalized spatial organization of urban land usage. The social geography of the core city was also beginning to undergo significant change at this time as the suburban exodus of the middle class was accompanied by the arrival of southern blacks. These parallel migration streams would achieve massive proportions after World War II. The southern newcomers were attracted to the northern city by declining agricultural opportunities in the rural South and by offers of employment in the factories as industrial entrepreneurs sought a new source of cheap labor to replace European immigrants, whose numbers were sharply curtailed by restrictive legislation after the mid-1920s. But urban whites refused to share residential space with in-migrating blacks, and racial segregation of the metropolitan population swiftly intensified as citywide dual housing markets dictated the formation of ghettos of nonwhites inside their own distinctive social territories.

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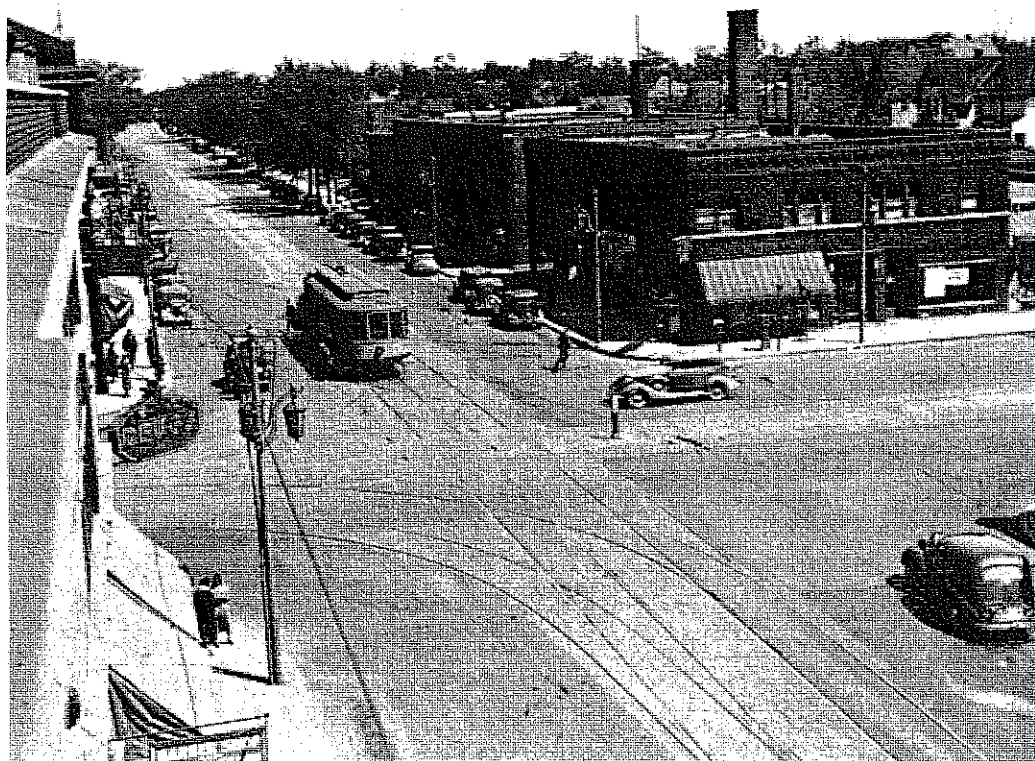


FIGURE 3.11. The automobile did not become a major force in the central city until the post-World War II era, but its presence can already be detected by the 1930s. This photograph was taken in St. Paul, Minnesota, in 1932. Source: Minnesota Historical Society.

Freeway Era (1945–Present)

Unlike the two preceding eras, the post-World War II Freeway Era was not sparked by a revolution in urban transportation. Rather, it represented the coming of age of the automobile culture, which coincided with a historic watershed as a reborn nation emerged from 15 years of economic depression and war. Suddenly the automobile was no longer a luxury or a recreational diversion: it quickly became a necessity for commuting, shopping, and socializing—essential to the successful exploitation of personal opportunities for a rapidly expanding majority of the metropolitan population. People snapped up cars as fast as the reviving peacetime automobile industry could roll them off the assembly lines, and a prodigious highway-building effort

was launched, spearheaded by high-speed, limited-access expressways.

Given impetus by the 1956 Interstate Highway Act, these new freeways would soon reshape every corner of urban America as the new suburbs they engendered represented nothing less than the turning inside-out of the historic metropolitan city. In retrospect, this massive acceleration of the deconcentration process “cannot be considered a break in longstanding trends, but rather the later, perhaps more dynamic, evolutionary stages of a transformation which was based on a pyramiding of small scale innovations and underlying social desires” (Sternlieb & Hughes, 1975, p. 12).

The snowballing effect of these changes is expressed spatially in the much-expanded metropolis of the postwar era (Figure 3.2, Era IV), whose expressway-dominated in-

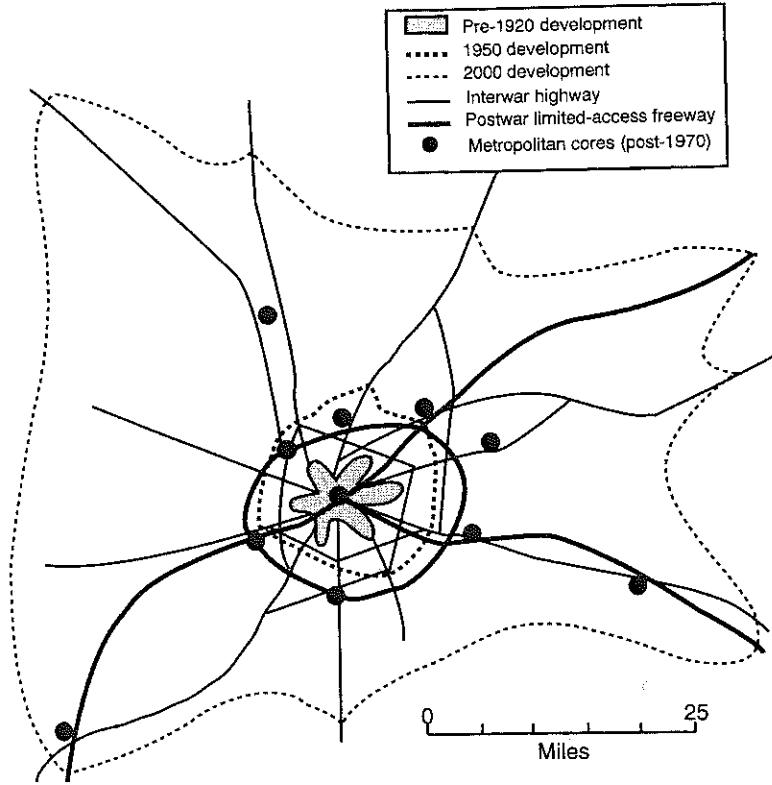


FIGURE 3.12. The spatial pattern of growth in automobile suburbia since 1920. Source: Muller (1981, p. 257). Copyright 1982 by Charles E. Merrill. Adapted by permission.

Infrastructure again produced a network-biased development pattern reminiscent of the Electric Streetcar Era (Figure 3.2, Era II). A more detailed representation of contemporary intraurban morphology is seen in Figure 3.12, showing the culmination of eight decades of automobile suburbanization. Most striking is the enormous band of growth that was added between 1950 and 2000, with freeway sectors pushing the metropolitan frontier deeply into the surrounding zone of exurbia. The huge curvilinear *outer city* that arose within this new suburban ring was most heavily shaped by the circumferential freeway segments that girdled the central city—a universal feature of the metropolitan expressway system, originally designed to allow long-distance interstate highways to bypass the congested urban core. Today, more than 100 of these expressways form complete *beltways* that are the most heavily traveled roadways in their regions. The prototype high-speed circum-

ferential was suburban Boston's Route 128, completed in the early 1950s; by the 1980s, such freeways as Houston's Loop, Atlanta's Perimeter, Chicago's Tri-State Tollway, New York–New Jersey's Garden State Parkway, Miami's Palmetto Expressway, and the Beltways ring Washington and Baltimore had become some of the best-known urban arteries in the nation.

The maturing freeway system was the primary force that turned the metropolis inside-out after 1970, because it eliminated the regionwide centrality advantage of the central city's CBD. Now *any* location on that expressway network could easily be reached by motor vehicle, and intraurban accessibility swiftly became an all-but-ubiquitous spatial good. Ironically, large central cities had encouraged the construction of radial expressways in the 1950s and 1960s because they appeared to enable downtown to remain accessible to the swiftly dispersing suburban population. As one economic

activity after a locational footropolis, however, suburbanization greatly reduced the suburban growth beltway corridor

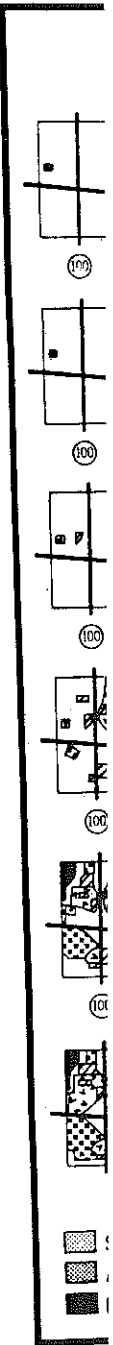


FIGURE 3.1
Baerwald (197...)

activity after another discovered its new locational footlooseness in the freeway metropolis, however, nonresidential deconcentration greatly accelerated. Much of this suburban growth has gravitated toward beltway corridors; Figure 3.13 displays the

typical sequence of land use development along a segment of circumferential I-494 just south of Minneapolis.

As high-speed expressways expanded the radius of commuting to encompass the entire dispersed metropolis, residential loca-

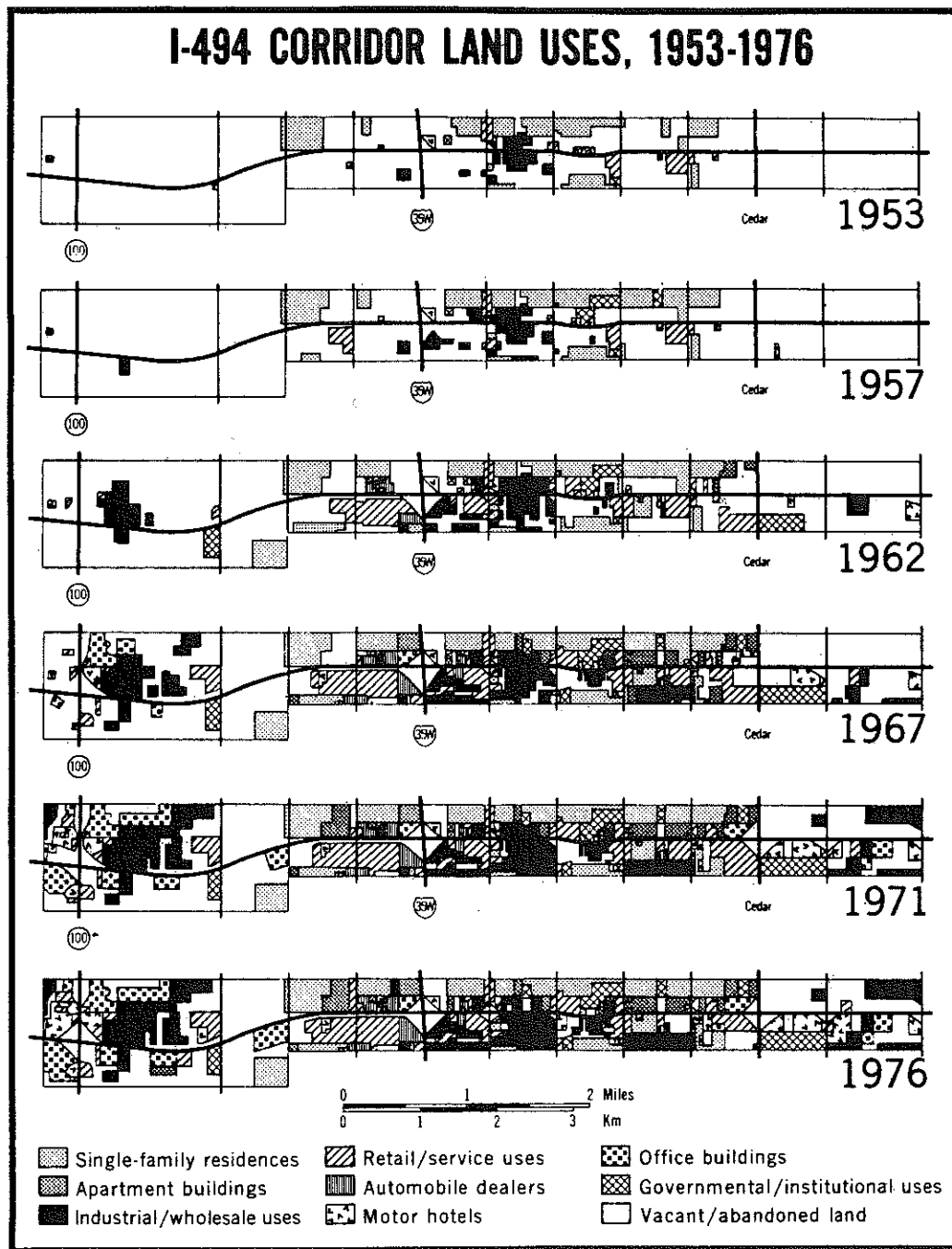


FIGURE 3.13. Land use change in the Interstate-494 corridor south of Minneapolis, 1953–1976. Source: Baerwald (1978, p. 312). Copyright 1978 by The American Geographical Society. Reprinted by permission.

tional constraints were relaxed as well. No longer were most urbanites required to live within a short distance of their job. Instead, the workplace had now become a locus of opportunity offering access to the best possible residence that a household could afford anywhere within the urbanized area. Thus the heterogeneous patterning of sociospatial clusters that had arisen in prewar automobile suburbia was writ ever larger in the Freeway Era—giving rise to a *mosaic culture* whose component tiles were stratified not only along class lines but also according to age, occupational status, and a host of minor lifestyle differences (Berry, 1981, pp. 64–66).

These developments fostered a great deal of local separatism, thereby intensifying the balkanization of metropolitan society as a whole:

With massive auto transportation, people have found a way to isolate themselves; . . . a way to privacy among their peer group. . . . They have stratified the urban landscape like a checker board, here a piece for the young married, there one for health care, here one for shopping, there one for the swinging jet set, here one for industry, there one for the aged. . . . When people move from square to square, they move purposefully, determinedly. . . . They see nothing except what they are determined to see. Everything else is shut out from their experience. (Schaeffer & Sclar, 1975, p. 119)

After more than a half-century of Freeway Era change, certain structural transformations have emerged from what was, in retrospect, one of the most tumultuous upheavals in U.S. urban history. Figure 3.12 reveals the existence of several new outly-

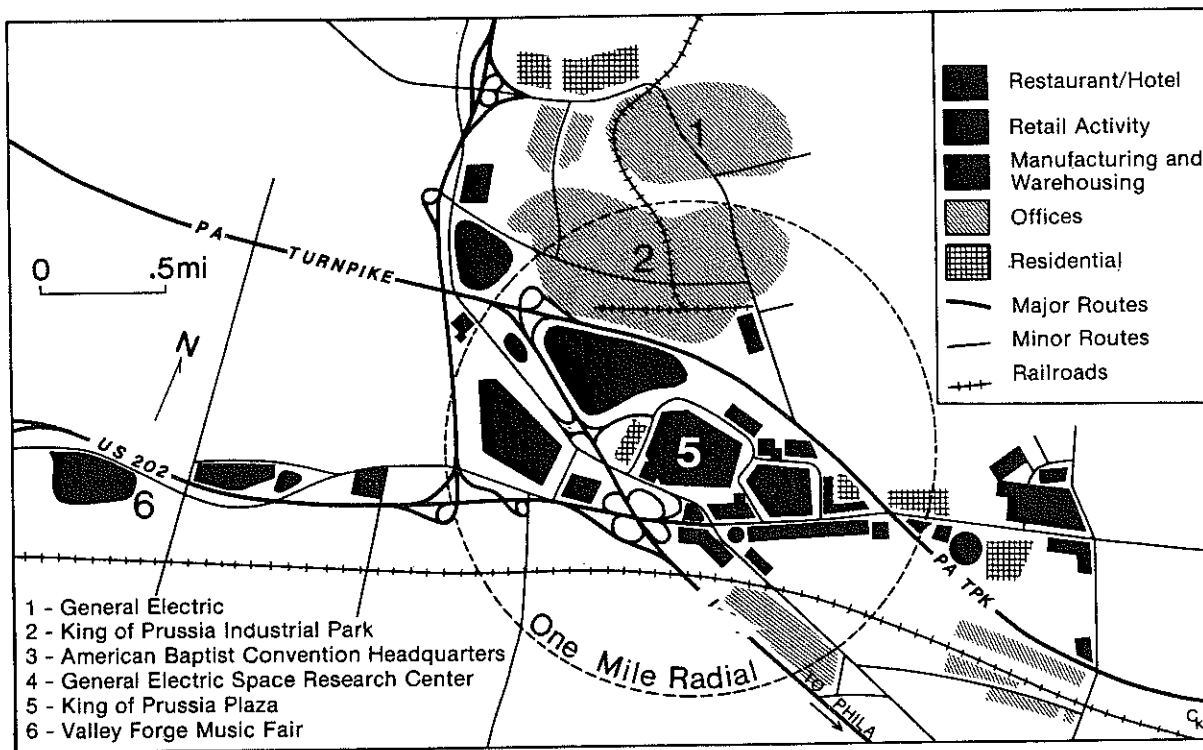


FIGURE 3.14. The internal structure of nonresidential activities in a typical suburban downtown: King of Prussia, Pennsylvania. Source: Muller (1976, p. 41). Copyright 1976 by The Association of American Geographers. Adapted by permission.



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FIGURE 3.15. An aerial view of Tyson's Corner in Fairfax County, Virginia, outside Washington, D.C., one of the nation's largest suburban downtowns. Source: County of Fairfax (Virginia), Office of Comprehensive Planning.

ing metropolitan-level cores. Today, such downtown-like concentrations of retailing, business, and light industry have become common landscape features near the major highway intersections of the outer city that now encircles every large central city. A representative *suburban downtown* of this genre is mapped in Figure 3.14, revealing the array of high-order activities that have agglomerated around the King of Prussia Plaza shopping center at the most important expressway junction in Philadelphia's northern and western suburbs.² Dozens of such diversified activity cores have matured since the 1970s, and suburban downtowns

such as Washington's Tyson's Corner (Figure 3.15), Houston's Post Oak Galleria, Los Angeles' South Coast Metro, and Chicago's Schaumburg have now achieved national reputations.

In his book-length survey of suburban downtowns—which he calls *edge cities*—Garreau (1991) set forth some minimum requirements that an activity center must meet in order to be classified as an edge city:

1. At least 24,000 jobs
2. 5,000,000-plus square feet of leasable office space

3. 600,000-plus square feet of leasable retail space
4. More jobs than bedrooms
5. An identity as a single place
6. No significant structure more than 30 years old.

By the mid-1990s, nearly 200 of these new urban agglomerations had been identified nationwide, "most at least the size of downtown Orlando (in contrast, fewer than 40 [central-city] downtowns are Orlando's size)" (Garreau, 1994, p. 26).

As the suburban downtowns of the outer city achieve economic-geographical parity with each other (as well as with the CBD of the nearby central city), they provide the totality of urban goods and services to their surrounding populations, and thereby make each sector of the metropolis an increasingly self-sufficient functional entity. This transition to a polycentric metropolis of *realms*—the term coined by Vance (1964) to describe the ever-more-independent areas served by new downtown-like activity cores—requires the use of more up-to-date generalizations than are provided by the "classical" concentric-zone, sector, and multiple nuclei models of urban form. Such an alternative to these obsolete core-periphery models of the interwar metropolis is seen in Figure 3.16.

Another useful contemporary model (which builds on the work of Baerwald [1978], Erickson [1983], and others) was developed by Hartshorn and Muller (1989) to interpret the evolution of the suburban spatial economy. Accordingly, the developments of the Freeway Era are generalized as five growth stages. First was the *bedroom community* stage (1945–1955), dominated by a massive postwar residential building boom but accompanied by only a modest expansion of suburban commercial activity. This was followed by the *independence* stage (1955–1965), during which suburban economic growth accelerated, led by the first wave of industrial and office parks and, after 1960, by the rapid diffusion of regional

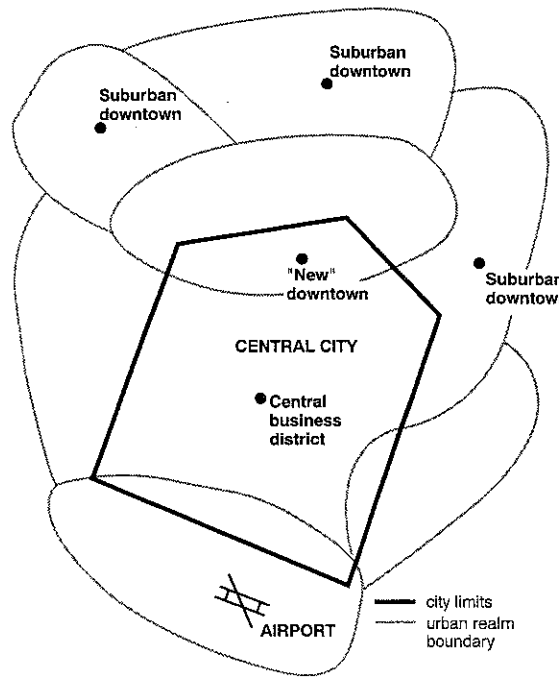


FIGURE 3.16. The generalized layout of urban realms in relation to the central city and suburban downtowns of the polycentric metropolis. Source: Hartshorn and Muller (1989, p. 378). Copyright 1989 by V. H. Winston & Son. Reprinted by permission.

shopping centers. These malls came into their own during the third stage, *catalytic growth* (1965–1980), attracting a myriad of office, hotel, and restaurant facilities to cluster around them, and sparking the swift maturation of the suburban economic landscape in these expanding cores and many freeway corridors that connected them. The fourth stage, *high-rise/high-technology*, spanned the 1980s and saw the flowering of scores of suburban downtowns increasingly dominated by high-rise office buildings; simultaneously, these burgeoning activity cores attracted high-technology research-and-development facilities, and by 1990 the outer suburban city had become the leading geographic setting for the nation's new postindustrial service economy. The post-1990 period constitutes the fifth stage in which the trends of the 1980s have continued unabated, and suburban downtowns are

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now evolving into *mature urban centers* as their land use complexes steadily diversify and perform ever more important economic, social, and cultural functions that are increasingly international in scope.

URBAN TRANSPORTATION IN THE POSTINDUSTRIAL METROPOLIS

As the nation completes its transition to a postindustrial economy and society in the opening years of the 21st century, intra-urban movement patterns will continue to adjust to new geographical circumstances. Quaternary (information-related) and quinary (managerial- and decision-making-based) economic activities, which increasingly dominate the U.S. labor force, are demonstrating locational preferences that assume the outer metropolitan ring will continue to be the essence of the contemporary U.S. city for a long time to come. Above all, these activities seek the most prestigious metropolitan sites. The leading concentrations of the pacesetting electronics/computer industry—which overwhelmingly prefer high-amenity suburbs from California's Silicon Valley to North Carolina's Research Triangle Park to outer Boston's Route 128 corridor—provide a classic example.

Today there is much evidence that these research-and-development/manufacturing complexes have become cornerstones in the reorganizing urban landscape shaped by the digital revolution. Silicon Valley has proven to be a prototype, spawning dozens of imitators throughout the world that function as *technopoles*—planned techno-industrial agglomerations that create the hardware and software products of the new informational economy (Castells & Hall, 1994). Technopoles are increasingly regarded as the most successful places in shaping “the geographic importance of future cities and communities,” and the biggest winners have been “self-contained high-end suburbs that . . . service the needs of

both the burgeoning high-technology industries and their [supremely skilled] workers” (Kotkin, 2000, pp. 6–7, 9).

Spearheaded by technopoles, the expanding development of high-order suburban activity centers is also driven by changes in the U.S. economy. One set of forces involves the dynamic economic and social networks of *globalization*, whose expanding international linkages have triggered new investment flows and entrepreneurial opportunities that have revitalized aging CBDs in a number of central cities (Wilson, 1997). But less often realized is that globalization forces simultaneously work to intensify and accelerate the suburban transformation of the U.S. metropolis in a number of ways: (1) suburban centers participate strongly when their urban region becomes a “world city,” and some even establish their own direct international ties; (2) improvements in a region's telecommunications network creates a grid of local nodes that links suburban downtowns as well as the CBD to the rest of the world; (3) the transnational corporations that control much of the global economic system are increasingly headquartered in suburban locations, particularly in the Greater New York region; and (4) the foreign presence in suburban America is constantly growing, ranging from the ownership of businesses large and small to the rise of thriving new ethnic communities dominated by affluent professionals (Muller, 1997).

The other major set of forces reshaping the U.S. economic landscape is associated with the relentless *expansion of the services sector*, a term understood to also include the quaternary and quinary activities mentioned above. The growth of this sector has been at the forefront in the suburbanization of employment since the mid-20th century (see Figure 3.10). That trend picked up speed during the 1960s, and by 1973 the nation's suburban rings surpassed the central cities in total number of jobs. This gap has widened steadily, and the author's calculations show that a quarter-century later the

1998 intrametropolitan split for the 35 largest metropolitan areas averaged 28% of the jobs in the central city and 72% in the suburbs.

A more detailed picture of this services-led shift is presented in Table 3.2, which traces the suburban percentage of metropolitan-area employment by major sector from 1970 to 1998. Philadelphia was selected from the eight metropolises for which data are available because it is a microcosm of the national metropolitan economy and precisely reflects the 28/72% percent split exhibited by the 35 largest urban areas. During the final three decades of the 20th century, overall employment in Philadelphia's suburbs advanced from just under 50% of the metropolitan total to a position of critical mass (greater than half) during the 1970s, and then to the level of dominance (greater than two-thirds) by the mid-1980s. Sectorally, this pattern was mirrored by manufacturing, wholesaling, and retailing, and all three today are more than 80% suburbanized. The two services sectors shown in Table 3.2 were slower to decentralize, but both approached suburban dominance as the century ended. The finance/insurance/real estate sector is a particularly good barometer of spatial change in the services sector because of its traditionally strong ties to the CBD and relative inde-

pendence from intraurban population shifts. Nonetheless, its detachment from Center City Philadelphia between 1970 and 1990 is starkly apparent, and if present rates persist nearly 75% of the region's jobs in this sector will be located in the suburbs by the end of this decade. Moreover, this trend is paralleled by another pacesetter services subsector: professional/scientific/technical services. As of 1998, the first year such data were reported, the employment split for this triad of specialized-services professions stood at central city—34.5%/suburban ring—65.5%.

The changes just described strongly point toward continuing development of the outer city and even greater suburban dominance of intrametropolitan employment geography. Thus the leading urban transportation challenges of the early 21st century focus on the efficiencies of moving people about the dispersed, polycentric city of realms. Although urban freeways spawned the new multinodal metropolis, it is unlikely that many more will be built in the foreseeable future. Local resistance is intensifying, and governments at all levels are increasingly unable to afford the enormous construction costs that are often heightened by the need to conform to stricter environmental regulations (see Bae, Chapter 13, this volume). Moreover, there is consider-

able evidence that the metropolitan area's way network added credit from other the new hierarchy (some cities in Giuliano

As an alternative to the construction systems is a solution to (a subject to volume). Strict-train systems in Cleveland, and Los Angeles light-rail transit in San Diego, Dallas, and major bus undertaken in Dallas. Not grown during the past two that transit even a significantly dispersed density, urban city.

The rapid downtown magnifies to At the local level in these municipalities traffic travel hour clamor for (To some extent resembles organizational strategies for Planners have imaginative

TABLE 3.2. Suburban Percentage of Major Employment Sectors, Metropolitan Philadelphia, 1970–1998

| Employment sector | 1970 | 1978 | 1988 | 1998 |
|--|-------------|--------------------|--------------------|--------------------|
| Manufacturing | 54.5 | 66.0 | <u>75.0</u> | <u>81.5</u> |
| Wholesale trade | 39.7 | 60.5 | <u>73.6</u> | <u>82.0</u> |
| Retail trade | 55.9 | <u>68.0</u> | <u>73.0</u> | <u>80.3</u> |
| Finance/insurance/real estate ^a | 31.0 | 45.9 | 59.2 | 66.5 |
| Health services ^b | 46.1 | 51.8 | 57.4 | 62.5 |
| Total employment | 48.8 | 60.2 | <u>68.3</u> | <u>72.2</u> |

^aPre-1998 data also include Real Estate employment in Finance/Insurance sector.

^bPre-1998 data do not include Social Assistance employment in the Health Services sector.

Note. Percentages shown in boldface exceed the *critical mass* level (50%); percentages shown in underlined boldface exceed the *suburban dominance* (66.7%) level. Source: U.S. Bureau of the Census, *County Business Patterns* (annual).

able evidence that building new expressways does not improve the flow of traffic: metropolitan Los Angeles and Houston, for instance, both possess extensive superhighway networks, yet each new road link that is added creates more congestion as traffic from other routes is quickly attracted to fill the new highway's vehicle-handling capacity (some of the reasons for this are outlined in Giuliano, Chapter 9, this volume).

As an alternative to additional highways, the construction of new public mass transit systems is still being pursued as a possible solution to urban transportation problems (a subject treated in Pucher, Chapter 8, this volume). Since the 1960s, heavy-rail, electric-train systems have been started in metropolitan San Francisco, Washington, D.C., Cleveland, Atlanta, Miami, Baltimore, and Los Angeles. Elsewhere, less expensive light-rail trolley lines have been constructed in San Diego, Buffalo, Portland (Oregon), Dallas, and more than a dozen other cities; major bus system improvements have been undertaken in Detroit, Indianapolis, and Dallas. Nonetheless, although total ridership grew during the 1990s, transit's market share has been declining in these cities over the past two decades. One major reason is that transit lines are incapable of serving even a significant minority of the increasingly dispersed travel demands in the low-density, automobile-oriented outer suburban city.

The rapid proliferation of suburban downtowns and specialized activity centers magnifies two additional mobility problems. At the local level, infrastructure development usually lags behind the pace of growth in these mushrooming cores, thereby spawning traffic congestion nightmares at peak travel hours that contribute to the rising clamor for density controls in these areas. (To some extent these new suburban centers resemble the old CBDs, but their spatial organization is different and requires new strategies for travel demand management.) Planners have responded with a number of imaginative short-term policies and long-

term master plans to counter the trend toward "suburban gridlock" (see Cervero, 1986, 1989), but implementation of strict measures is often resisted by local political leaders.

The other mobility problem engendered by the reorganization of the metropolitan space-economy is the growing geographical mismatch between job opportunities and housing. Glittering suburban downtowns are invariably surrounded by upper-income residential areas, thereby requiring most of the people who work there to commute considerable distances to the nearest communities with affordable housing. This not only heightens the level of lateral suburb-to-suburb commuting on already overburdened highways for middle-income employees; it also increases the flow of extended-distance sectoral commuting—from both the inner central city in one direction and the outlying exurban fringe in the other—for less-skilled workers.

With the U.S. metropolis now all but turned inside-out, and with most of its continuing growth occurring in peripheral zones, ever greater reliance on the automobile becomes unavoidable despite the rising costs of such dependency. In much of the United States today, people already pay more for transportation than for clothing, entertainment, and health care combined; and, in a steadily rising number of urban regions, residents spend more on transportation than on *housing* (Mencimer, 2002). With so many urbanites willing to pay this steepening price of access to the burgeoning opportunities of the outer city, policymakers, planners, and public officials will be hard-pressed to keep up as the proliferation of cars threatens to overwhelm their abilities to manage the metropolitan circulatory system.

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NOTES

1. This approach, while emphasizing the key role of transportation, does not mean to suggest that movement processes are the only forces shaping intraurban growth and spatial organization. As will be demonstrated throughout this chapter, urban geographical patterns are also very much the products of social values, land resources, investment capital availability, the actions of private markets, and other infrastructural technologies.
2. Since this map was compiled, this huge suburban complex has continued its growth, spearheaded by a doubling in size of the superregional mall at its heart (labeled 5 in Figure 3.14).

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