1 THE WORLD OF TODAY

> Marco Polo describes a bridge, stone by stone. "But which is the stone that supports the bridge?" Kublai Khan asks. "The bridge is not supported by one stone or another," Marco answers, "but by the line of the arch that they form." Kublai Khan remains silent, reflecting. Then he adds: "Why do you speak to me of the stones? It is only the arch that matters to me." Polo answers: "Without stones there is no arch."
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> Italo Calvino (1972, 82)

This is a book about the future of metropolitan areas in the United States. The current state of technology and the existing pattern of land use will determine much of that future over the next few decades. To illustrate this point, consider the prosaic yet easily overlooked fact that all of the adults who will be alive in the next twenty years have already been born. Therefore, it is first necessary to understand the present and the past before looking directly at the future.

Consider housing, for example. Approximately 2 percent of the housing stock in the United States consists of new construction each year. Put another way, more than 80 percent of the housing stock is more than ten years old. The decaying manufacturing districts, public housing projects, and office blocks in some central cities were once brand-new construction. The new construction today is the old building of tomorrow, and the options available to us are restricted by our choices today and in the past.

How would you describe the place where you live? If you are similar to most Americans, you live in a metropolitan area. By definition, then, you live in or near a relatively large city. But to understand the place you live, it is not sufficient to look only at the city, even if you live there. Conversely, one cannot ignore the city. In fact, what really matters are the relations among the parts of the city. For example, the commercial districts of the city interact with suburban employment centers, and the manufacturing areas typically found along the fringes of the metropolitan area interact with residential neighborhoods large and small. We can't describe these

relationships, though, without first identifying the nature of the parts of the metropolitan area. What is even more challenging is that the set of relationships is not stable. Instead, it continues to evolve as businesses open and close, houses are bought and sold, and land is converted from one use to another.

The excerpt from Calvino is the most succinct way I know of describing how I approach the study of urban areas. Much of this book will be spent looking in some detail at the parts of the metropolitan area. The overarching goal of this text is to create a framework for understanding how those parts interact with each other today, in ways that have both antecedents in the past and potential for the future.

> No one would describe most North American cities as picture-postcard places, but they too are not cities in the accepted sense, or at least not in the traditional sense. Socially fragmented, recklessly entrepreneurial, relying almost completely on the automobile, and often lacking a defined center, they are without many of the conventional trappings of urbanity that have characterized cities in the past. According to their detractors, they are not real cities at all. At least they are not real cities if one assumes that real cities have cathedrals and outdoor plazas, not parking garages and indoor shopping malls; that they have sidewalk cafés, not drive-through Pizza Huts, and movie theaters, not cineplexes; that real cities are beautiful, ordered, and high-minded, not raucous, unfinished, and commercial.
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> Witold Rybczynski (1995, 32)

There is a substantial and growing concern about urban sprawl. In fact, this concern has been present since at least the 1950s, and everyone from politicians to academics to popular commentators chime in on the subject regularly. The list of books and articles warning of the dangers of sprawl is voluminous, including novels such as *The Crack in the Picture Window* (Keats 1956), think-tank reports such as *Once There Were Greenfields* (Benfield, Raimi, and Chen 1999) and the famous "costs of sprawl" study (Real Estate Research Corporation 1974), and popular works such as *The Geography of Nowhere* (Kunstler 1993). The excerpt from Rybczynski is representative, although he goes on in his book to demonstrate why he disagrees with much of the sentiment. Much of this concern is directed toward the fact that by the late twentieth century cities looked different from cities at the beginning of the century. Only a few people have asked the question: What should we expect a metropolitan area to look like today? This question leads to the uncomfortable answer that the metropolitan area implicitly or explicitly desired by the antisprawl writers is no longer a possibility. We are creating a new world.

The world we live in today is *metropolitan*. I prefer this word to *urban*, because the line between the city and its surroundings is less clear-cut than it was in earlier times. The term also harks back to the idea of the

Greek polis, or city-state, which accounted for much of the known world to its inhabitants. Similarly, the vast majority of daily life for twenty-first-century Americans takes place within their metropolitan area of residence, and their travels usually involve going from one metropolitan area to another.

According to the 2000 census, 80.3 percent of the U.S. population lived in metropolitan areas. Until the Industrial Revolution, it was impossible to support more than about 15 percent of the population in urban areas without importing food. In only 200 years, we have gone from a world in which the dominant life-style was rural and agricultural to a world in which the dominant life-style is urban and employed in the service sector.

The metropolitan life that is the legacy of the Industrial Revolution has not remained static. Instead, the nature of cities has changed even as the overall population has shifted from rural to urban living. The transformation of cities from the small dense walking cities of the early Industrial Revolution to the even denser transit-oriented settlements of the early 1900s to the sprawling auto-centric places of today was not immediate. Places such as Dallas, Houston, Los Angeles, and Atlanta became stereotypes of low-density automobile cities, supposedly in contrast to cities such as Cleveland and Boston that developed earlier. But careful analysis illustrates that much of the difference between these newer cities and the older cities is superficial. One academic study, for example, found that by 1990 the relative dominance of downtown Cleveland was similar to that of downtown Los Angeles and that the distribution of employment throughout the Cleveland metropolitan area was quite similar to that in Los Angeles (Bogart and Ferry 1999).

Because the best data are only available from the census every ten years, there is a substantial lag in acquiring and analyzing data. Many of the data used in this book are from 1990. This is a weakness in that the world has continued to evolve, but it is an even greater strength because it illustrates my point that the world had already changed by 1990. Much of the popular and policy discussion in the last decade has not been grounded in reality.

WHY MY VIEW IS DIFFERENT

Three themes distinguish the view of metropolitan areas that I advance from much of the popular and even academic work concerned with urban sprawl. The first theme is the interdependence among the parts of a metropolitan area. The second theme is that mass transit is a historical anomaly. The third theme is that lags in investment mean that the existing metropolitan structure will always be inefficient on the basis of the existing technology.

Interdependence

Much of the public debate about metropolitan economic structure has to do with whether the role of downtown is being eroded and how to restore the downtown's previous economic dominance. Along with this debate has been a steady questioning of whether investments in downtown tourist attractions and office buildings have come at the expense of the inhabitants of city neighborhoods (especially poor ones). A major federal initiative of the 1990s, the creation of so-called *empowerment zones,* echoes the many state government enterprise zones that seek to focus investment and employment growth in specific parts of the city.

New urbanists have promoted the idea of *job-housing balance*. The goal is to reduce the use of automobiles by creating neighborhoods where the number of jobs equals the number of housing units. In that case, people can walk to work rather than drive. If sufficient retail opportunities are included, people can also do much of their shopping in their neighborhood rather than elsewhere.

All of these debates and initiatives are fundamentally misguided. The modern metropolitan area is not a set of islands – downtown, neighborhood, edge city, empowerment zone – that can be neatly separated and analyzed. Rather, it is a complex web of relationships among these various places. People live in one place, work in another, shop in yet another, and enjoy recreation someplace else. According to Peter Hall (1998, 867), even planned suburbs built in Sweden in the 1950s and 1960s had "a two-way commuter flow that completely contradicted the planners' analysis." To understand how a region works, we must focus on these relationships among areas in addition to describing areas in isolation.

As an economist, the type of relationship that I focus on is trade in goods and services. Everyone is familiar with the idea that the United States exports and imports goods and services to and from other countries. A less familiar idea is that importing and exporting also occur at a smaller geographical level. When you drove to work this morning from your house in Suburb A to your job in Suburb B, you represented an export of labor services from Suburb A and an import of labor services to Suburb B. Similarly, when you ate at a downtown restaurant, you were importing restaurant services from downtown to Suburb A. One of the advances in urban economic theory in the recent past has been the systematic application of the analytical tools developed to explain international trade to understanding intermetropolitan and even intrametropolitan trade. In this book, I will explain metropolitan structure using these tools, and I'll illustrate them using evidence from metropolitan areas throughout the United States as well as detailed data on trade in labor services among the parts of the Cleveland metropolitan area.

Cars versus Mass Transit: Which Is the Historical Anomaly?

Prior to the 1830s, there was no mass transportation. Instead, the dominant means of transport was a type of ubiquitous personal transportation – walking. (If you were rich enough, you might own a cart, a horse, or even a carriage.) This transportation mode was ubiquitous because you could use it to get from one part of a metropolitan area to any other part of the metropolitan area. It was personal because it involved one person making the decision about the time and route of travel.

Since the early 1900s we have increasingly relied on another form of ubiquitous personal transportation – the automobile. In 2000, the census reported that 75.7 percent of commuting trips were taken by people driving alone, with another 12.2 percent car pooling. In other words, fewer than one out of every eight commuters made the journey to work in an alternative way to a private automobile. Even in 1960, more than 60 percent of commuting trips were by private automobile. Noncommuting trips, which represent more than four-fifths of all personal trips, are even more likely to be taken using a private automobile.

Between the middle 1800s and the early 1900s, the dominant form of transportation was mass transit. This evolved from the horse-drawn omnibus of the 1830s to the electric subway and internal-combustion engine bus of the 1940s, but it retained the same basic features throughout. One feature was service to only a limited fraction of the metropolitan area, along railroad tracks, trolley lines, or bus routes. A second feature was a schedule and route not under the control of the passengers.

Why did mass transit come to dominate personal transportation, and even more important, why did it lose its dominance? The short answer is that people are willing to trade convenience and control for increased travel speed. Before the 1830s, when omnibus routes were first developed, the fastest and most convenient means of transport was to walk. After the car was developed, people could again conveniently and quickly arrange for their own transportation. Between those times, though, was a period where the huge speed advantage of mass transit offset its disadvantages in convenience and control. Throughout this book, we will examine how the metropolitan structure resulting from mass transit continues to influence both the built environment and the policy discussion long after mass transit's dominance has faded.

Ongoing Technological Obsolescence

We live in a world of rapid and continuing technological change. In such a world, it is natural to wonder why our cities are not "state of the art." The answer does not necessarily lie in bad planning or corrupt government or benighted developers, but rather in the difference between technological

obsolescence and economic obsolescence. Consider the following example: the computer you buy today is no longer the best available next month, but that doesn't mean that you buy a new computer every month. The same principle applies to urban structure.

A good rule of thumb is that office buildings have a physical life expectancy of about eighty years and an economic life expectancy of about sixty years. Houses are built with an expectation that they will have a life of about forty years. There are exceptions, of course, but these rules help explain what we see. The urban area that we live in reflects a weighted average of the new construction of the past. Thus, much of the construction is technologically obsolete, from the office building that is insufficiently wired to accommodate computer networks to the house that reflects the demographics and preferences of the 1950s instead of the 2000s. A city is largely an anachronism, a relic left over from another time.

The current metropolitan structure was implied as early as the 1920s, with the widespread introduction of the truck and private automobile. Why, then, did it take until the 1960s (and the 1990s in some places) for urban sprawl and metropolitan area structural transformation to become issues of popular concern? Because investment does not occur immediately. The structures in our cities in the 1930s, 1940s, and 1950s had been overwhelmingly built for a world of mass transit; only gradually did the new construction become dominant.

This sense of inappropriateness is exaggerated in a place that has been growing slowly or declining and is mitigated in rapidly growing areas. The nature of human perception magnifies the difficulty in discerning urban structure. As an area evolves from rural to urban, it does not do so smoothly and quickly. Rather, there is a succession of abrupt changes, each bringing seemingly endless delays. If we could be gifted with Rip van Winkle's ability to move twenty years at once, we could easily detect the new urban pattern that has replaced the former rural pattern. (Imagine what cicadas think as they emerge every seventeen years to a noticeably different world.) Unfortunately, we actually live those twenty years one zoning-hearing-traffic-delayed-new-neighbor-store-opening-store-closing day at a time. Compounding the problem, there is never a final point at which we can say that the urban area is completed. Instead, we've no sooner finished developing than it is time to renovate, reuse, or rethink some part of the plan.

Urban areas are the heart of innovative activity in the economy. Jane Jacobs famously asserted (1961, 188), "Old ideas can sometimes use new buildings. New ideas must use old buildings." The old buildings she refers to provide an environment with relatively low overhead in which those new ideas can be nurtured and brought to fruition. Those new ideas in turn imply both new buildings and new relationships among buildings, in the fullness of time.

We are only now seeing the full apotheosis of the car and truck. There is a further implication of this theme. If personal computers, for example, really do herald a new spatial relationship among people and companies, then it may be decades before we notice a major change in the way our cities are structured. In this book, I will use evidence on the pattern of growth to illustrate the extent to which we are "living in the past."

WHAT DOES A TYPICAL METROPOLITAN AREA LOOK LIKE?

> "From now on, I'll describe the cities to you," the Khan had said, "in your journeys you will see if they exist."
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> But the cities visited by Marco Polo were always different from those thought of by the emperor.
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> "And yet I have constructed in my mind a model city from which all possible cities can be deduced," Kublai said. "It contains everything corresponding to the norm. Since the cities that exist diverge in varying degree from the norm, I need only foresee the exceptions to the norm and calculate the most probable combinations."
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> "I have also thought of a model city from which I deduce all the others," Marco answered. "It is a city made only of exceptions, exclusions, incongruities, contradictions. If such a city is the most improbable, by reducing the number of abnormal elements, we increase the probability that the city really exists. So I have only to subtract exceptions from my model, and in whatever direction I proceed, I will arrive at one of the cities which, always as an exception, exist. But I cannot force my operation beyond a certain limit: I would achieve cities too probable to be real."
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> Italo Calvino (1972, 69)

Implicit in all discussions of metropolitan structure is the notion of a typical metropolitan area. This concept is inherently limited, as each city has unique features. Despite the concerns about homogenization expressed by critics of modern metropolitan form, it is still possible to distinguish differences among cities even when they share many common features.

Pace Calvino, my professional training inclines me to describe a typical city using the approach of Kublai Khan. What are the features of a typical twenty-first-century metropolitan area in the United States?

- Employment in Centers Reaches 30–40 Percent (and less than half of this is downtown): The majority of employment is dispersed throughout the metropolitan area. While downtown remains the largest center for employment, its dominance of the metropolitan landscape has been attenuated. The employment centers, including downtown, are relatively specialized, meaning that they are not carbon copies of each other but instead have unique and evolving characteristics.

- Twenty-Five-Minute Average Commute (and 85 percent commute fewer than forty-five minutes): Despite popular concerns over long commutes, commuting times have stayed almost constant for decades. The distance commuted has increased, but the distribution of time spent commuting hasn't changed, as the growing use of cars combined with the decentralization of employment has dispersed congestion from the downtown throughout the metropolitan area.
- Density: The average person in a metropolitan area lives where there is a population density of about 3,000 people per square mile (4.6 people per acre) and works where there is an employment density of about 4,000 people per square mile (6.2 people per acre). About one-third of the people live within five miles of the central business district (CBD), and only about 40 percent of the employment is within five miles of the CBD (Glaeser and Kahn 2004).
- Metropolitan Area Size: More than half of the metropolitan population in the United States is found in metropolitan areas of more than 1.5 million people. At the same time, more than one-fourth of the metropolitan population lives in metropolitan areas with a population of fewer than 350,000.
- Congestion: The measured extent of congestion has increased. A typical urban rush-hour commuter can expect to spend forty-seven hours per year "stuck in traffic," according to the latest study by the Texas Transportation Institute (Schrank and Lomax 2005).
- Plans for Building or Renovating a Stadium for Professional Sports: In addition to the ongoing demands for professional sports facilities, many cities continue to add or renovate convention centers, museums, aquariums, and other venues designed to attract business travelers and tourists both from within the metropolitan area and from other metropolitan areas.
- At Least One College or University that Attracts Students from Beyond the Metropolitan Area: In some cases, the college is the original attraction around which a city developed, such as in Ann Arbor, Michigan (home of the University of Michigan). In other cases, the growth of a city has led local business and political leaders to promote the creation or expansion of an existing school, such as in Tampa, Florida, where the University of South Florida has mushroomed as the Tampa–St. Petersburg area has grown. A quality college is a *sine qua non* both for business location purposes and as an amenity for residents.
- Segregation by Race and Income: The typical metropolitan area remains quite segregated by race, but the level of segregation has been falling since 1970. This reflects the important changes in the legal environment between 1940 and 1970 resulting from the civil rights movement. There has been extensive segregation by income

throughout history, and that segregation continues today. What has changed over time is the way in which this income segregation is enforced.

MENTAL MODELS OF METROPOLITAN AREAS

The dominant intellectual approach to describing cities during the twentieth century was the *monocentric city* model. In a monocentric city, all commercial and industrial activity takes place in the central business district, while the rest of the city consists of residential areas. This description was reasonably accurate as recently as 1950 in most cities. Even the monocentric city model was a simplified description of the urban form of twentieth-century cities. Chicago was in many ways the canonical monocentric city, and it was where the so-called Chicago school of urban sociology developed, which emphasized a model of urban areas as concentric circles with distinct land uses. Even Chicago, though, had as many as six distinct commercial subcenters as early as 1910 (Schwartz 1976, 23). Interestingly, these were located at transit intersections, foreshadowing the future *edge cities* at the intersection of major highways.

Even by 1960 observers such as Jane Jacobs and Jean Gottman had discerned a new structure for metropolitan areas, although popular interpreters of their work have neglected this insight. This new structure was called the *polycentric city,* in recognition of the multiple centers of economic activity that now comprised the metropolitan area. While some people have recognized this change for more than forty years, it still has surprisingly little impact on the design of public policy. With notable exceptions, such as Phoenix's *urban villages* planning concept, most metropolitan areas remain wedded to a picture of the world in which the downtown of the central city is the dominant employment center. Local governments and private individuals devote great resources to reverse the exodus of businesses from the downtown. Some of this activity is appropriate, but much of it has an impact resembling that of King Canute's orders to the tide.

While there is now some general recognition that the polycentric model is a more accurate depiction of reality than the monocentric city model, the world has evolved beyond the basic polycentric model to a more diffuse system. The best analysis indicates that less than 50 percent of all metropolitan employment is located in employment centers, with the rest being distributed throughout the metropolitan area (Anas, Arnott, and Small 1998).

It is possible to overemphasize how dramatic the change has been. Consider, for example, the following quote from Gottman (1961, 397).

"A distinguished European [de la Blache 1921], visiting the United States in 1912–13, was deeply impressed by the marked sprawling of American cities":

> In America the city has spread out with heretofore unknown proportions. . . . The American city has a transportation apparatus that makes it possible to specialize its various wards, to separate the "town" of business from the "town" of the *home*, to place between them vast parks, to keep the countryside within itself. "The locomotive," Anthony Trollope wrote half a century ago, "is here a domestic animal." What would he say nowadays? Swarming all around, indefinitely expanding its suburban districts, the city is the most perfect expression of Americanism.

Changes in the location of employment have implications for understanding individual behavior. In a monocentric city, accessibility to work is equivalent to accessibility to shopping and cultural activities, because all are located downtown. In a polycentric city, the picture becomes more complicated, because people now need access not only to their jobs but also to the services produced in other employment centers. In addition, businesses in one employment center often consume services produced in other employment centers, such as a suburban corporate headquarters using a downtown accounting firm.

The increasing percentage of two-worker households makes the accessibility question even more complicated. When two people work in two different places, their total commute is the same in a variety of locations, although one person might have a longer commute in one location than the other person. When my wife and I married in 1992, she worked in Mentor, Ohio, about thirty miles east of where I worked in Cleveland, Ohio. We looked for houses in between our two jobs, but our total one-way commute each day was bound to be about thirty miles. The only question was which one of us would have the longer commute.

Even with only one worker, the simple tradeoff of accessibility to downtown versus housing price is not completely satisfying as a description of the choices made by households. Randall Crane (1996) discusses the impact of the potential for suburban employment on household preferences for location relative to the workplace. The key point of his analysis is that a household will not minimize its current commute, but instead will take into account the possibility that the commute could change while the household remains in the same residence.

The relative importance of commuting in household location decisions has fallen because of these trends in employment location. Commuting accounts for fewer than 20 percent of all personal trips, and the percentage has been falling for several decades. Accessibility can no longer be simply measured as the distance or time from home to downtown, but must include several workplaces, shopping areas, cultural centers, and so on.