

24

HOUR CITIES

Real investment performance,
not just promises



HUGH F. KELLY
FOREWORD BY RICHARD FLORIDA

ROUTLEDGE

24-Hour Cities

24-Hour Cities is the first full-length book about America's cities that never sleep. Over the last 50 years, the nation's top live-work-play cities have proven themselves more than just vibrant urban environments for the elite. They are attracting a cross-section of the population from across the US and are preferred destinations for immigrants of all income strata. This is creating a virtuous circle wherein economic growth enhances property values, stronger real estate markets sustain more reliable tax bases, and solid municipal revenues pay for better services that further attract businesses and talented individuals.

Yet, just a generation ago, cities such as New York, Boston, Washington, San Francisco, and Miami were broke (financially and physically), scarred by violence, and prime examples of urban dysfunction. How did the turnaround happen? And why are other cities still stuck with the hollow downtowns and sprawling suburbs that make for a 9-to-5 urban configuration? Hugh F. Kelly's cross-disciplinary research identifies the ingredients of success, and the recipe that puts them together.

Hugh F. Kelly is a Clinical Professor of Real Estate at the NYU Schack Institute of Real Estate. He served as the 2014 Chair of the Board for the Counselors of Real Estate organization and heads his own consultancy practice. He frequently speaks at international academic and industry conferences.

‘Hugh Kelly’s *24-Hour Cities* is a must-read for today’s real estate investors. It overflows with insights derived from the author’s long career as a leading commercial real estate researcher gifted with a keen sense of the wider social sciences. Hugh Kelly is an astute analyst of the forces that make cities vibrant; he artfully reminds us that successful cities are where people want to live, work, and play.’ *Martha S. Peyton, Managing Director, TIAA-CREF*

‘Hugh Kelly proves that a well written, insightful economics book is not an oxymoron. In *24-Hour Cities* Kelly also validates an assertion made two decades ago and he connects today’s discussion on the future and shape of cities to its historical evolution. This is a must-read for urbanists and those who wish to be ahead of the curve.’ *Raymond G. Torto, Lecturer, Harvard Graduate School of Design*

‘Five-hundred years ago, in 1516, Sir Thomas More’s *Utopia* described the ideal city. We have not created it yet, and it is unlikely we will do so soon. In his formidable study *24-Hour Cities*, Hugh Kelly analyzes the evolution of American cities since World War II and discusses the current leading models: the 24-hour city, the 9-to-5 city, the large market city. There can be no one model, no one ideal city, since socioeconomic factors and public preferences differ. The fourteen cities Kelly examines are not problem-free. He shows how the best excel at solving problems and meeting challenges – of business opportunities, culture, livability and innovation. They optimize human capital, financial capital, physical capital and social capital. *24-Hour Cities* thoughtfully reviews the plus and minus factors that attract or repel various city occupants – the young, creative, entrepreneurial; the older, established, conventional; those seeking lowest cost vs. those willing to address higher costs for the benefits received. It will be a leading urban affairs text of 2016.’ *Daniel Rose, Chairman, Rose Associates, Inc.*

‘Hugh Kelly’s book *24-Hour Cities* is a remarkable achievement. It puts empirical flesh on the bones of the 24-hour-city hypothesis. Of the fourteen largest commercial real estate metro areas, he names and analyzes the seven that are 24-hour cities and the seven that are not. There is nothing fuzzy or vague about why some are and some are not. This is an important book for real estate analysts as well as urban scholars.’ *Matthew Drennan, Visiting Professor of Urban Planning, UCLA*

‘When RERC and Equitable Real Estate coined the term “24-hour cities” in the 1995 issue of *Emerging Trends in Real Estate*, we envisioned these markets – the cities where Americans could best live, work and play – as the places that would lead the fledgling commercial real estate recovery at that time. This concept was originated through interviews for *Emerging Trends in Real Estate*, which I was part of as president of RERC. As president of Situs RERC today, I am pleased to state that with this book, Hugh Kelly has truly embraced the concept of 24-hour cities and has taken it to another level by investigating what a 24-hour city currently means (versus 9-to-5 marketplaces). Based on his case studies and qualitative research, Kelly disputes and refutes old claims, examines socioeconomic and demographic trends, and artfully describes how 24-hour cities have evolved while competitively attracting physical, financial, and human capital. I congratulate him on this outstanding portrayal of what we only began to conceive of 20-some years ago.’ *Ken Riggs, President, Situs RERC*

‘Cities are an increasingly hot topic. Unfortunately, much of the commentary in recent books on cities is anecdotal or agenda driven. Therefore, Kelly’s original research and focus on 24-hour cities is most timely. Kelly is uniquely qualified to have written this seminal work, being actively engaged in both the private sector and academia. He is respected internationally. *24-Hour Cities* is topical, fact driven and highly readable. It will set a new standard in our understanding of the modern city state.’ *William McCarthy, CRE*

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Hugh F. Kelly

First published 2016
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

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British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

A catalog record for this book has been requested

ISBN: 978-1-138-65317-7 (hbk)

ISBN: 978-1-138-80511-8 (pbk)

ISBN: 978-1-315-75249-5 (ebk)

Typeset in Galliard
by Florence Production Ltd, Stoodleigh, Devon, UK

To my family: my wife Betty Duggan, and children Beth, Neil, Joanna, and Luke Kelly, who have enriched my life in the midst of the live-work-play environment of Brooklyn, New York.

Contents

<i>Foreword by Richard Florida</i>	xiii
<i>Acknowledgments</i>	xv
<i>A primary question: What is a 24-hour city?</i>	xvii
Introduction: The 24-hour-city hypothesis	1
In the heart of darkest Brooklyn . . . but incredibly connected	2
Who's who in the 'hood	3
Why does all that matter?	5
Conceptions and misconceptions about cities that never sleep	6
Testing the 24-hour hypothesis	12
1 The dynamism of the American city: Triumphs and troubles	15
A look from our living rooms	16
Depictions of New York and Los Angeles	18
Cities: Their growth and their problems – not a laughing matter	19
Modalities of change	29
Some reflections on theory	32
Applying theory to our practical issue: Cities, their forms and their performance	35
2 The 1950s: A revolutionary decade?	40
Federal investment in highways a key policy driver for the decade	41
Sports franchises: Lessons in economic geography	43
Conventional truths and unexpected consequences	53
Trends: A key form of change	65
3 Buying and selling the American Dream: The pull to the perimeter in the 1960s	73
Marketing and motivation	75
Redefining the “dream”	77

Desiderata: Better schools and less crime	81
The argument from land economics	85
Forms of change: Maturation	89
4 The hollowing of the center: The push away from the core in the 1960s and 1970s	99
The Great Society	100
The Nixon years	111
The Great Migration	113
Deindustrialization and urban decline	114
Forms of change: Changes of state	118
5 Central tendencies versus the hollow-core story: A half-century of push and pull in America's cities	125
White (collar) flight: The corporate headquarters exodus	126
Generational change and the preference for cities	128
Forms of change: Cycles	146
6 Trends behind the trends	155
The world is flat – or is it?	155
Global cities	157
Technology and the “death of distance”	160
Environmental pressures and the variable impact of/on cities	165
Final observations on the big trends	171
Forms of change: Disruption	172
7 What makes the 24-hour city different?	186
The descriptive definition	187
Housing	188
Retail stores and shopping	193
Transportation	200
Crime	208
Amenities and “quality of life”	215
8 Fourteen cities	224
Diurnal measures	225
Automobile traffic	226
Open at night	229
Summary of evening-economy indicators	235
Periprinations: The 24-hour and 9-to-5 cities studied	237

9 Voting with the wallet: Paying a premium for the 24-hour city	257
Commercial office space: Metrics of the workplace	260
Trends in development and market size	261
Economic operations: Rent and vacancy comparisons	262
Investment returns	266
Investment transaction flows	271
What the real estate data say	275
10 Gleanings from the past and present; glimmers for the future	280
Change (before you have to beg for change)	281
A list of ingredients does not constitute a recipe	284
Thinking about live–work–play cities	287
How cities learn to compete intelligently – and how they forget	290
A final observation on cities and their problems	292
 <i>Index</i>	 297

Foreword

Richard Florida

“Deep in the night, I am almost unaware how many people are on the street unless something calls them together, like the bagpipe,” the late great Jane Jacobs wrote, in *The Death and Life of Great American Cities*. “Who the piper was and why he favored our street I have no idea. The bagpipe just skirled out in the February night,” she continued. “Swiftly, quietly, almost magically a little crowd was there . . . when he finished and vanished, the dancers and watchers applauded, and applause came from the galleries too, half a dozen of the hundred windows on Hudson Street.”

The very words “24-hour city” call up the paintings of Edward Hopper, the neon-drenched cinematography of James Wong Howe, or maybe a sad line from a blues song, such as Jimmy Reed’s “bright lights, a big city, they went to my baby’s head.” The images are of sad men in suits and snap brim hats hunched over coffee counters; sloe-eyed cigarette girls in smoke-filled nightclubs; a stack of early-morning papers being tossed off a truck onto a rain-slicked sidewalk while the L thunders overhead. Sexy or sad, dreamy or dangerous, in almost every case, they’re tinged with nostalgia – they’re windows into an urban nightscape that no longer exists. But in fact it still does.

When most people call New York the city that doesn’t sleep, what they mean is that it is a great city to party and have fun in. But the truth is, its “24-hour-ness” (and the 24-hour-ness of many other great cities) is correlated, not just with drinking and crime and the licit and illicit liaisons that go along with them, but also with robust economic growth, high levels of innovation, the ability to attract talent, and even the increased safety that comes from having more people on the street at all times of day and night.

Almost all of our understanding of cities and of urbanism and urban economic development is based on the city of the day – the city of work and industry and commuters and all of that. But in truth, you can’t understand cities and urbanism in the modern talent-driven creative economy without understanding what I like to call the city at night. The city at night is a place where creative innovators mix and mingle and network to build their companies and careers – not just to blow off their proverbial heads of steam, although they do that too. The nocturnal activities of great cities are important large-scale contributors to their economic output and their lights are signal indicators of economic activity and progress. I have used satellite images of them to identify the globe’s

great economic centers and to show that, instead of the world being flat, as Tom Friedman alleges, it is concentrated, clustered, and spiky.

Hugh F. Kelly has done the research and provides the textbook on this new and more productive kind of 24-hour city. He has dug into not just New York but what he calls “24-hour-ness” in Boston, Chicago, Miami, Washington, DC, and San Francisco. And, he’s developed a new set of empirical metrics to better understand it, based on patterns of electricity consumption, population density, the volume of vehicular traffic between 9:00 p.m. and 5:00 a.m., the share of commuters who use public transportation, the number of 24-hour drugstores within ten miles of the city center, the ratings of restaurants and ethnic restaurants, nightlife, and culture, and more.

The bottom line? 24-hour places are not only statistically different than sprawling 9–5 cities but have statistically superior economic performance.

24-Hour Cities does much more than prove a point that no longer needs any special pleading – that the pendulum is swinging back from car-dependent sprawl and single uses to mixed uses and density. Kelly gives us the required historical perspective, and brings the economic data vividly to life. Looking through one end of the glass, he traces the macroscopic processes that hollowed out so many great cities in the post-war years, and then brought some (but far from all of them) back to vibrant life in the 21st century. Looking through the other, he captures the texture of their ever-changing streets and neighborhoods in microscopic detail, with an ethnographer’s precision and a novelist’s flair for the telling phrase.

Kelly’s portrait of his own 24-hour neighborhood of Kensington, Brooklyn, shows us how the urban transportation grid (the F-train that accounts for some 3 million trips in and out of the neighborhood every year; the taxis, gypsy cabs, and ubers that travel the nearby Brooklyn Queens Expressway to Manhattan and the airports; the trucks that drive through the neighborhood making local deliveries or on their way to Long Island) is so much more than a conveyor belt carrying people to and from their jobs. Rather, it is a way to disperse the energy of the downtown business district throughout the wider region. More interesting still, he shows how the diversity of Kensington’s population – Orthodox Jews, Irish Catholics, Sunni Muslims, South Asians, Eastern Europeans, African Americans, and whites, who are old and young, straight and gay, married and single – is drawn together and held together by the city’s and its own cultural, economic, and social vitality.

24-Hour Cities is a must-read for real estate professionals, economic and community developers, city leaders, and urbanites of all stripes. More than that, it’s an engrossing read for anyone who is captivated by the speed, energy, and extravagant adaptability of the new age of 24-hour urbanity.

Richard Florida is the Director of the Martin Prosperity Institute at the University of Toronto’s Rotman School of Management, Global Research Professor at New York University, and the co-founder and editor-at-large of *The Atlantic*’s CityLab. He is the author of the best-selling *The Rise of the Creative Class*.

Acknowledgments

It all begins with family, doesn't it? My grandparents, John and Catherine Hayes, made room for my parents and the first three of my generation in their own second-floor apartment on Fenimore Street, Brooklyn. Grandpa would rock me in the living room, reading stories or spontaneously rhyming verses, creating from the start a love of words and of learning. Later, the tables would be reversed, as they came to living in our basement in East Flatbush. The concept of a multigenerational household came into my life well before the term "boomerang child" entered our social vocabulary.

My parents taught me the work ethic and an ethic of openness and service. My father, John Kelly, was a bus driver, a loader of trucks, a bartender, a blue-collar guy who took pride in putting bread on the table. My mother, Margaret Kelly, gave living testimony to the virtues of love, neighborliness, and tolerance in a mixed-ethnic community. Many were the scraped knees and bloody elbows she bandaged from the motley group of friends her four sons hung out with.

I have been blessed by many great teachers, from kindergarten to graduate school. None opened my horizons more than Father James McMahan and Father Robert Lauder at Cathedral College, Douglaston, Queens, and Hannah Arendt and Reiner Schurmann at the New School for Social Research.

Before embarking on my real estate career, I worked intensively with many great priests, nuns, and laity in Brooklyn's inner-city parishes: Fathers Ray Gruhn, Jack Waldren, and Mike Breslin stand out, as do Sisters Elizabeth Folles, Eileen Payne, Terry Agliardi, and Ginny Hall. Add to these my close friends and colleagues Gene Tully, Andy Jordan, and Neil Griffin, and Michael Gecan of the Industrial Areas Foundation, so instrumental in organizing the 50 churches of East Brooklyn Congregations and developing the Nehemiah Program that has built more than 3,500 home in the poorest areas of Brownsville, New Lots, and the environs since the mid-1980s.

John R. White and Edgar B. Madsen gave me the opportunity to learn about real estate, cities, and the built environment, by taking a chance on me at Landauer Associates in 1978. Ken Patton and Rosemary Scanlon, my Deans at New York University's Schack Real Estate Institute, encouraged me to develop as a real estate economist in all ways and were particularly supportive as I plunged into research on 24-hour cities after 1999.

Dr. Raymond Torto generously allowed me access to the CBRE Econometrics' database for historical rents, vacancies absorption, construction, and other data for metropolitan markets and submarkets. Likewise, Robert White provided me with access to the Real Capital Analytics database on commercial property transactions, prices, capitalization rates, and aggregate sales volumes. Through an academic membership in NCREIF, I was able to use its Custom Query Facility to generate model portfolios for sets of cities and metropolitan areas, enabling the comparison of cumulative total returns on investment presented in this book. All real estate researchers benefit from the enormous work involved in developing and maintaining these databases and, I am sure, share in my gratitude that they provide a foundation for analysis and further investigation.

Stephen Roulac facilitated my introduction to the University of Ulster, in Northern Ireland. Stephen, Alastair Adair, and Stanley McGreal were my dissertation advisors as I put together the data and analysis that became the thesis upon which this book is based. They encouraged me as I completed the PhD degree at the age of 63 – making me the epitome of the “slow learner.”

My daughters, Beth and Joanna, assisted in a couple of essential (and tedious) tasks. Beth compiled and arrayed the diurnal traffic counts, city by city, upon which the analysis in Chapter 8 is based. And Joanna took upon herself the task of searching the text for city references to be included in the Index. They spared me hours in taking this work upon themselves.

Coming full circle, my wife Betty Duggan, my grown kids and their significant others were there to watch me “walk” as I received my PhD at the University of Ulster, in Belfast, Northern Ireland, on July 4, 2012. I have been blessed, and I am grateful.

A primary question

What is a 24-hour city?

This book examines an assertion articulated at least two decades ago. In the 1995 edition of *Emerging Trends in Real Estate*, it was stated:

For the future, we believe the premier investment opportunities will be available in the nation's "24-hour cities." These markets, urban or suburban, are places where people can comfortably and securely live, work, and shop. In contrast, "9-to-5" markets – those with weak residential fundamentals – have poor investment prospects.

As a working descriptive definition, the 24-hour city was considered to have several recognizable attributes: "attractive residential neighborhoods proximate to or integrated with the central commercial district; convenient shopping opportunities close to the workplace; a safe and secure environment; excellent mass transportation; and recreational, cultural, and environmental amenities."

Obviously, these definitions are qualitative and not a little subjective. But, as there was a claim that investment performance – a measurable indicator – would follow from a city's 24-hour status (or lack thereof), there has been a pressing need to develop similarly measurable criteria for judging a place's 24-hour status. Moreover, cities have proven very dynamic over time, under the influence of many forms of change. It is important to see how some cities have evolved their 24-hour character during the course of decades, while other cities have adopted a different urban form.

This book takes on that task, as a first step in examining the built environment in its interactions with social trends and investment objectives.

1 The dynamism of the American city

Triumphs and troubles

Love them or hate them, people care about cities.

Boosters talk about “superstar cities” that are magnets for the creative class.¹ They note that civilization itself is rooted both etymologically and historically in the city. Urbanity is a much desired attribute in an individual, denoting culture, education, and style. Theodore Parker, a Massachusetts divine of the mid-19th century, said that cities “have always been the fireplace of civilization, whence light and heat radiated out into the dark.”² Kevin Lynch, in *The Image of the City*, observed, “Looking at cities can give a special pleasure, however commonplace the sight may be.”³ Such laudatory sentiments about cities date at least as far back as Sophocles, who wrote, “The highest achievements of man are language and wind-swift thought, and the city-dwelling habits.”⁴

Bosh and bunk, the detractors retort. Cities attract and concentrate all that is worst in human experience. They are the home of degeneracy, crime, and corruption, the locus of disease and discontent. “When [Americans] get piled up upon one another in large cities as in Europe,” predicted Thomas Jefferson, “they will become corrupt as in Europe.”⁵ Even so urbane an individual as Brooks Atkinson, the notable mid-20th century *New York Times* theatre critic, wrote, “All cities are superb at night because their hideous corners are devoured by darkness.”⁶ Those looking to find examples of dysfunction in urban America do not have to look hard: Detroit; Camden, NJ; Gary, IN; East St. Louis, IL. But, even in apparently prosperous cities, we find dangerous slums: East Brooklyn and South Jamaica in New York City; Houston’s south central Third Ward; the Ashburn, Woodlawn, and South Lawndale neighborhoods in Chicago; areas between downtown Atlanta and Hartsfield-Jackson airport.

When William Julius Wilson noted that, “in 1959 less than one-third of the poverty population in the United States lived in metropolitan central cities; by 1991 the central cities included close to half of the nation’s poor,” the statement resonated with Americans.⁷ By 2012, the numbers looked like this: 46.5 million Americans lived below the official poverty line: 38 million of them lived in the nation’s metropolitan areas. Whereas rural poverty gripped 8.5 million people, 19.1 million poor resided in the nation’s principal cities, and 18.1 million poor were in the suburbs surrounding those cities.⁸

Even so ardent a supporter of cities as Benjamin R. Barber acknowledges that we must “examine the pitfalls of the city . . . taking into account urban injustice, inequality, and corruption.” Barber maintains that cities exacerbate “many of modernity’s most troubling features,” and that they do so “in every domain, from education, transportation, and housing to sustainability and access to jobs.”⁹ As he celebrates “the triumph of the city,” Edward Glaeser worries that the city’s great strength, its density:

makes it easier to exchange ideas or goods but also easier to exchange bacteria or purloin a purse. All of the world’s older cities have suffered the great scourges of urban life: disease, crime, congestion. The fight against these ills has never been won by passively accepting the way things are or by mindlessly relying on the free market.¹⁰

It should not be considered a “spoiler alert” that this book will be arguing in favor of a particular urban configuration termed “the 24-hour city.” Nevertheless, there will be no attempt to ignore the problems of any American city. This is a story of differentiation, change, and the interrelation of urban economies and the built environment. The so-called 24-hour cities are not the “average” American city. In fact, they will be seen to be distinctively different by a number of socioeconomic and real estate-market measures. It is not a simple story, and it is one where history plays an important role.

In this chapter, we will start the story in the middle, at the mid-20th century, with a look at two of the largest American cities, New York and Los Angeles, as they were depicted in popular culture on broadcast television. We will look at the countervailing forces, powerful forces that were shaping cities in the decades prior to World War II, and the singular effects that the war itself exerted. Toward the end of the chapter, we will examine the concept of change itself, unpacking what seems to be a very simple notion and seeing that change comes in at least five varieties.

A look from our living rooms

Long before the pall of “reality television” descended over American popular culture, network TV reflected, and to some degree shaped, the way people lived their lives across the United States. Families gathered around 21-inch black and white TV sets in their living rooms, sets made in the USA by Motorola, RCA, Philco, GE, Zenith, and other “household names.” The news of the day was delivered by trusted names such as Douglas Edwards, John Cameron Swayze, Walter Cronkite, Chet Huntley, and David Brinkley. TV was one of those unanticipated but massive shifts that occurred following World War II, as technological advances emerging in military applications were translated into the private sector, and US manufacturing refocused on civilian applications.

The enormous demographic wave that became known as the Baby Boom provided a vastly expanding market. Television’s penetration into that market

was breathtaking. Whereas only 1 out of every 200 US households had a television set in 1946, more than 55 percent had one in 1954. By 1962, nine out of ten households owned a TV set, and since then TV ownership has become practically universal (Figure 1.1). The way Americans spent their time also changed. In 1950, the average household watched television 4 hours and 35 minutes per day. By 1975, that time had expanded to 6 hours and 7 minutes. By 2005, the time allocation was 8 hours and 11 minutes, as 24-hour programming options and technologies such as the video cassette recorder (VCR) and digital video recorder (DVR) became available and increasingly affordable.¹¹

Television not only used more and more of the time available for all US households' activities – reducing time available for social and civic interactions outside the home¹² – but it also conveyed information about life beyond the walls of the homestead. In this, there was both good and bad.

The early decades of television are celebrated as a “golden age” that brought original dramas by Alfred Hitchcock, Rod Serling, and Paddy Chayefsky. Leonard Bernstein and Arturo Toscanini presented classical music and had a vision of bringing its cultural heritage to a mass audience.¹³ *The Ed Sullivan Show*, which at its peak in 1957 had a weekly audience of nearly 15 million viewers, is remembered for its presentation of pop stars, but also brought scenes from the Broadway stage – including *West Side Story*, *Oklahoma!*, *Gentlemen Prefer Blondes*, and *Man of La Mancha* – to a coast-to-coast viewership.

Public opinion was increasingly shaped by the immediacy of televised events. The 1954 Army–McCarthy hearings began the unravelling of the power and reputation of Wisconsin Senator Joseph McCarthy, with the drama capped by Army attorney John Welsh's parting response, “Senator: you've done enough. Have you no sense of decency, sir? At long last, have you left no sense of decency?”¹⁴ The Kennedy–Nixon debates of 1960 brought live political discourse directly into American living rooms.

Support for the ambitious US space program was galvanized by the countdown-to-splashdown coverage of the Mercury, Gemini, and Apollo

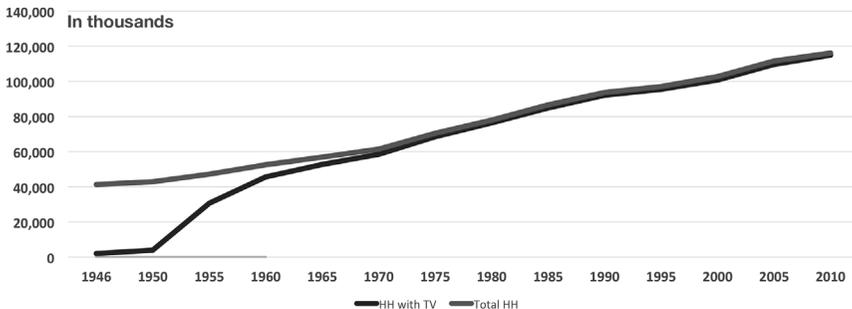


Figure 1.1 Penetration of television into US homes

Source: TV Basics, based on A.C. Neilson data (households with TV); US Census Bureau (total households)

missions – with their moments of triumph and of tragedy. News of the civil rights and Vietnam War protests and counterreactions sharpened awareness of social divisions shaped by economics, politics, race, and age.

The shocking round of assassinations of President John F. Kennedy, Senator Robert F. Kennedy, and Dr. Martin Luther King Jr. provided a national experience of shared grieving. The impeachment proceedings against President Richard Nixon, the ensuing Watergate hearings, and his eventual resignation from office, covered “live from Washington,” offered a lesson in civics unparalleled in US history.

For all this, however, the most remembered judgment about television in this era is that of Newton N. Minow, Chair of the Federal Communications Commission, in a speech to the National Association of Broadcasters. He challenged the network executives in 1961 to watch an entire day of their own programming, without distraction, and declared, “Keep your eyes glued to [the] set until the station signs off. I can assure you that what you will observe is a vast wasteland.”¹⁵

Minow’s characterization undoubtedly referred to the array of sitcoms, westerns, game shows, and cop shows that were the staples of network programming, especially in the evening “prime time” hours. From today’s perspective, though, there is a fair amount to be learned from that programming. Not the least interesting feature is how cities and American life were portrayed on the airwaves, both reflecting what audiences identified with and shaping how viewers perceived their contemporary environment.

Depictions of New York and Los Angeles

Let’s look at a couple of classic blue-collar sitcoms, *The Honeymooners* and *The Life of Riley*.

The Honeymooners was introduced as a comedic sketch as early as 1951 and was expanded into a 30-minute program for the 1955–1956 season. It was set in Brooklyn, one of New York City’s five boroughs, and featured two young couples living in walk-up flats. Both wives had vaguely defined careers prior to marriage, but are mostly “stay-at-home” spouses, whose characters are largely foils to their husbands. Ralph Kramden (Jackie Gleason) is a New York City bus driver, and Ed Norton is a New York City sewer worker – interestingly, both municipal employees. They both make the same wage: \$62 a week. The set was spare: most action occurs in the Kramden’s main room, which served as living room, kitchen, and dining room. A chest of drawers, stove, and icebox were the furnishings. A window, without curtains, gave a view onto the fire escape and neighboring tenements. This was a no-frills, working-class slice of life – and realistic enough that, as a child of a Brooklyn bus driver myself, I imagined I could actually identify where the Kramdens and Nortons lived.¹⁶

This lifestyle was much in contrast with other popular family sitcoms, which were decidedly more upscale. The emblematic sitcoms of the era were *The Adventures of Ozzie and Harriet* (1952–1966), *Father Knows Best* (1954–1963),

and *Leave It to Beaver* (1957–1963). Whereas *Father Knows Best* and *Leave It to Beaver* were set in unidentified Midwestern suburbs, *Ozzie and Harriet* featured the Hollywood home of the actual Nelson family, a 5,214 square-foot home set on a half-acre lot just a block from the 160-acre Runyon Canyon Park, at the eastern end of the Santa Monica Mountains. (The tract was in private hands, owned by the supermarket magnate Huntington Hartford, during the time the TV show ran.) The TV families were all two-parent households with several children, whose fathers were white-collar workers. Ozzie Nelson, who played himself, was an entertainer and bandleader; Jim Anderson, the dad in the *Father Knows Best* household, was an insurance agent. Ward Cleaver, father of “the Beaver,” was simply known as a white-collar office worker in the fictional suburb of Mayfield, whose particular job was never specified.¹⁷

But a more telling contrast to *The Honeymooners* is another California-situated household comedy, *The Life of Riley*, which was broadcast on NBC from 1953 to 1958. Chester A. Riley was the father in a suburban Los Angeles family, but, like Ralph Kramden, was a blue-collar worker. His employer was the fictional Cunningham Aircraft Company, where Riley worked as a riveter. His wife, Peg, was the long-suffering parallel character to Alice Kramden. Unlike the Brooklyn couple, Chester and Peg had the stereotypical two-child household of son Chester Jr. and daughter Babs. And, mirroring the Ed Norton foil character of *The Honeymooners* (and Ed’s wife Trixie), the *Riley* program featured Chester’s scheming neighbor and co-worker, Jim Gillis, and his wife Honeybee.¹⁸

But the differences in the settings were much more striking than the similarities in the casting. Where the Kramdens and Nortons were in cramped, spartan flats, the Rileys and Gillises enjoyed detached, single-family houses. Where the Brooklyn couples had aging, depression-era appliances, the L.A. households learned, often comically, to cope with the array of gadgets that steadily advanced American consumer spending – devices that were a core source of advertising revenue for the developing TV industry. And, despite the common scheming of the principal characters at home and at work, there was little hint of upward economic mobility in Brooklyn, but an underlying theme that hard work would pay off with economic and material gratification for the L.A. families, who already had achieved a measure of the American Dream of house, property, and middle-class comfort.

The images and the *sub rosa* message of older and denser cities caught in a mire of urban stagnation and younger, more sprawling cities as a setting for upward mobility set a tone for expectation and a script for urban discussion that would shape popular attitudes and, to some degree, politics and urban studies for a generation or more.

Cities: Their growth and their problems – not a laughing matter

Since the days of Aristophanes (446–386 BCE), comedy has held up a mirror to society that has been disarming and occasionally critical. Plays such as *The*

Frogs, The Clouds, and Lysistrata are also some of the best evidence we have about the perspectives of common people (the *demoi*), as well as notables such as Socrates, Alcibiades, Athenian negotiators, and Spartan ambassadors. Furthermore, the Greek city (or *polis*) actually gave rise to the performances of comedies and tragedies. Plays were events staged in the context of public festivals and served civic functions, cultic as well as cultural.¹⁹ Although 1950s TV programs are unlikely to last for 25 centuries, they do serve as cultural markers of some importance.

The 1950s stand as a key transition decade for US demography and urban life. As Figure 1.2 shows, the rise of urban areas was well underway by the mid-20th century across the United States. About 1920, urban residents surpassed the nation's rural population. World War II accelerated migration to the cities, as these centers of America's Industrial Revolution were transformed into production machines for war matériel and logistic support.

What triggered and sustained the growth of large cities in the first 150 years of the nation's history? Technology, trade, and transportation all played critical roles. Events around the world, in Europe primarily, but also in Asia and Latin America, provide early examples of global connectedness. Money and banking cannot be ignored. Neither can the arts and culture, in both "high" and "popular" expressions.²⁰

Real estate in all its forms – housing, workplaces, stores, warehouses, hotels, and land itself – emerged as the tangible, visible instantiation of all those factors. Real estate provided the locus of manifold human activity, activity that took on distinctively urban characteristics over the course of the 19th and early 20th centuries. Real estate became emblematic of cities, a source of identification and frequently of pride. Real estate, truthfully, also became a discriminator in

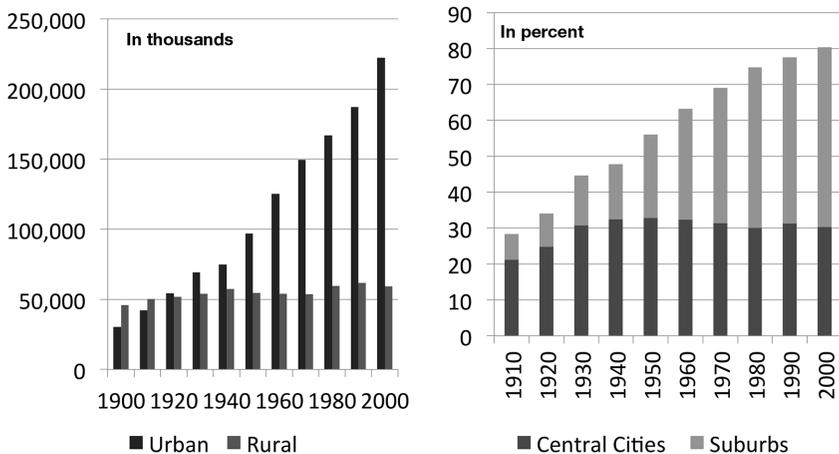


Figure 1.2 US population trends in the 20th century

Source: US Census Bureau

the urban setting, a marker of class, of education, of ethnicity, and of race. And real estate became a repository of physical capital, as well as a source of fungible wealth. In all these ways, too, real estate became a way to “keep score,” a point of comparison between past and future, between one place and another. The metrics of cities became bound up with the metrics of real property.

But, even as the urban–rural balance tipped toward the cities, the suburban ring around the central city began to assert greater dominance. This, too, was not accidental and had its origins in both new visions of urban life and deliberate public policy, closely related to strategic military aims. And, as we shall see, even the physical form of the “tract suburb” owes much to planning and development by the Department of War (the official name of The Pentagon until 1947). Again, as seen in Figure 1.2, the share of population living in the central cities began to decline as the suburbs accounted for virtually all of the growth in metropolitan areas.

Some basic background

The historical evidence is that cities and their regions have had evolving relations for centuries. Physical form, social structure, and economic functions have shifted over time, and America’s cities have certainly seen such shifts in dramatic fashion. The results were mixed.

The Industrial Revolution introduced scale issues hitherto unexperienced in American urban life. Mass production dissolved the links of home to workshop, while simultaneously creating unprecedented demand for labor. Despite Luddite fears of machines replacing workers, the factory generated an enormous requirement for workers to tend the tireless machines that multiplied labor inputs many times over, creating huge gains in factor productivity and, consequently, high returns to capital. Workers flocked to major cities, in both a rural-to-urban migration within the US and a great wave of international immigration to the US. With the limitations of 19th-century transportation, those workers typically resided close to the factories where they worked.

Quantitatively, as measured by population, total employment, aggregate wealth, and vital statistics such as mortality rates, the nation improved as urbanization intensified. To briefly sketch the picture, real per capita GDP is estimated to have been \$2,445 in 1870, prior to the era of explosive US urban growth. That figure more than doubled to \$5,079 by 1906, and doubled again to \$11,518 by 1943. (It would take until 1992 to double again to \$23,059.²¹)

In 1900, annual deaths ran at 17.2 per 1,000 of population. By 1940, the mortality rate had dropped to 10.8 deaths per 1,000 of population. That represented real progress.²²

In the largest cities in the most industrialized states, however, mortality ran above the national average on the eve of World War II. As Figure 1.3 suggests, the large cities (above 100,000 in population – the threshold used by the Bureau of Vital Statistics) in New England, the Mid-Atlantic, and Midwestern US had marginally higher mortality rates than the nation as a whole in 1940.

US average	10.8
Connecticut	10.8
Illinois	11.1
Maryland	12.6
New Jersey	11.4
New York	10.4
Ohio	11.5
Pennsylvania	12.2
Rhode Island	11.1

Figure 1.3 Deaths per 1,000 population in 1940 (cities of 100,000 or more residents) in industrialized states of Northeast US

Source: Vital Statistics Rates in the United States 1900–1940; Federal Security Agency – US Public Health Service

The numbers merely hint at the lived experience of many city residents, though. Students of urban society have long recognized the deleterious impact explosive industrialization had for quality of life in cities. Mumford describes the dreary streets, rubbish-strewn alleys, darkened houses, and fire-trap layouts of worker housing in 19th-century Philadelphia, Chicago, and Brooklyn.²³ Even as early as 1890, Riis had exposed the squalid conditions of Manhattan’s Lower East Side and Five Points slums in *How the Other Half Lives*, an example of the power of photojournalism.²⁴ Veiller describes a city block of 200 × 400 feet crowded with 605 tenement units, housing 2,781 people, with 264 water closets in total and not a single bath. Writing as secretary of the Tenement House Commission, he concluded that these were breeding grounds of “disease, poverty, vice, and crime.”²⁵

The stress on the urban fabric spread across virtually all cities. Boston experienced waves of immigration in the 19th century, even as its economy enjoyed an industrial boom. A Harvard study of lodging houses depicted the sordid conditions of the South End, with its “disorderly houses” and streets “heavy with the evil odors of degradation.” The Back Bay, now Boston’s great urban jewel, was then a fetid lowland of tidal mud flats and breeding ground for disease-spreading insects.²⁶ Warner’s path-breaking 1978 study, *Streetcar Suburbs: The Process of Growth in Boston 1870–1900*, shows how improvements in transportation hastened the outflow of population from the city center to Roxbury, Brighton, Dorchester, and other formerly rural outposts.²⁷

Sandberg conferred upon Chicago the epithets “hog butcher for the world” and “city of the big shoulders.”²⁸ As the 19th century drew to a close, Chicago had accomplished remarkable feats. It battled its way back from the Great Chicago Fire of 1871, which destroyed more than 18,000 structures over 3.5

square miles in the heart of the city. The hub of the US long-distance railroad system after the Civil War, Chicago became the center of the nation's meat-packing industry, with the assembly-line-based Union Stock Yards employing 25,000 workers. The railroads and Great Lakes shipping allowed Chicago to become a center of the iron and steel industry, with some 10,000 men employed by the Illinois Steel Company in 1900, just before its acquisition by J. Pierpont Morgan and merger into Morgan's US Steel Corporation.²⁹ The 1893 Columbian Exposition was known as "The White City," an ironic contrast to the general first impression offered by the city itself, called "a miasma of din, anthracite, and putrefaction" by Larson.³⁰ Seeking to provide escape from such conditions, Frederick Law Olmstead designed the upscale suburb of Riverside, whose early architecture featured the work of Frank Lloyd Wright, Louis Sullivan, and William Lebaron Jennings. The dense network of railroads connected agricultural centers such as Roselle, Argo, and Elgin to the city, as well as linking satellite industrial cities such as Waukegan, Gary, Cicero, and Aurora to the center. Chicago, in a matter of a few decades, evolved into a vast and fully articulated metropolitan area.

Lincoln Steffens, one of the journalists who achieved prominence in the early 20th century as "muckrakers," linked the appalling living conditions of big-city residents to the political corruption rife at the municipal level. In *The Shame of the Cities*, Steffens presented his investigations of "boodling" (institutionalized payoffs) in St. Louis, police graft in Minneapolis, the political/industrial machinations that governed franchising, vice, public contracts, and outright bribery in Pittsburgh, and general civic debasement in Philadelphia ("the worst-governed city in the country").³¹

It is against this background that alternative visions of urban life and/or the geographical alternative of suburban life were developed. Choosing the 1950s as a particular starting point for discussion is somewhat arbitrary – as any historical starting point would be. But this decade was a watershed in many ways, as unheralded as it has been when compared with the war decade that preceded it or the socially turbulent decade that followed. One measure of its significance is that, by 1960, the urban (metropolitan area) population was already 70 percent of the US total, and almost half of that number already lived in the suburbs. The momentum of population growth had shifted. The important story was no longer farm-to-city. It was city-to-suburb. Although downtowns were not yet "hollowing out" by 1960, they were no longer dominating the choices of America's households.

Tug of war: Centralization versus dispersion

Practically speaking, the second half of the 20th century was a period of stress for most large cities and a procession of triumphs for suburban America. Most analysis of US suburbanization has focused on the post-World War II spread of population and the consequent reconfiguration of metropolitan areas in

physical form, social structure, and economic function. Yet the urban–suburban relationship is anything but a “new phenomenon” of the late 20th century.

Frequently, the starting point for discussion of metropolitan change is the largely monocentric configuration of downtown central business district (CBD) and residential suburbs that epitomized urban form in the United States at the dawn of World War II. As Robert Beauregard notes, this form energized the economy, epitomized its power, and held its social fabric in coherence for a century. Suburbs and CBDs functioned as complements to one another. The city had not yet shed its manufacturing base, and so the urban center had a multiform economy, with white-collar office functions, blue-collar production, and retail districts contributing to its commercial base. Walk-to-work housing and mass transit tied residential neighborhoods to jobs. Civic, entertainment, and cultural facilities were integrated into the core, giving citizens familiarity and identification with the downtown.³²

Suburbs were typically linked with the core by streetcars or railroads. Warner described the “naturally occurring” streetcar suburbs surrounding Boston. The advance in transportation technology permitted the middle class to extend the distance to work, much as the upper income groups had previously enjoyed. The wealthiest households had multiple transportation options and could afford country homes as well as townhouses, utilizing the former as rural retreats and as summer residences in the era before air conditioning. Electrified streetcars allowed the middle class to have convenient access to downtown jobs from residential areas up to six miles from Boston’s City Hall. As these workers’ jobs were exceptionally stable, fixed rail connections by streetcar nicely accommodated their journey-to-work needs as well as contributing to stability in their residential neighborhoods. Lower-middle-class workers, on the other hand, had somewhat lesser job security and depended on the flexibility of Boston’s “cross-town” streetcars, which supported residential options within three miles of the center. Lower-income workers, for whom marginal transportation costs were critical, remained tied to walk-to-work neighborhoods. Warner termed the resulting configuration “a selective melting pot,” as it effectively segregated neighborhoods by income level, in roughly concentric circles. The concentration of the poor (in Boston’s case, immigrant Irish and Italians) in the city center set the stage for more serious urban economic and social problems in later years.³³

Philadelphia’s suburban growth featured similar patterns. Michael McCarthy notes the influence of Andrew Cassatt, a railroad executive who was also supervisor of Lower Merion Township, in the development of “Main Line” suburbs such as Bryn Mawr and Villanova as middle- and upper-income suburbs in the late 19th and early 20th centuries.³⁴ Robert Fishman identifies the key institutions of the Main Line suburbs: the railroad hotel, the Episcopal Church, and the country club. These imprinted the residential desirability of the suburb, while the railroad itself provided a durable link with the CBD as the commercial core of the metropolitan area.³⁵ McCarthy indicates a similar pattern in railroad suburbs located throughout New York’s Westchester County.

In the pre-World War II era, several attempts were made to put into practice the concepts of the “utopian” theorists such as Ebenezer Howard and Frank Lloyd Wright. Several of these sprang up in the New York metro area, including Radburn (in Fairlawn, New Jersey), Forest Hills and Sunnyside (in the New York City borough of Queens), and Garden City (in New York’s Nassau County, just beyond the city’s eastern border). Efforts to accommodate a range of income groups notwithstanding, development costs made them too expensive for working-class families, thwarting the intentions of project sponsors such as the Regional Plan Association and Russell Sage Foundation.³⁶

These attempts at “model” decentralization did inspire later efforts, but illustrated the difficulty of putting the planners’ ideals in practical form. The New Deal-era US Resettlement Administration (USRA), tried again in the 1930s with satellite new towns Greenbelt, Maryland, Greenhills, Ohio, and Greendale, Wisconsin. The efforts ran afoul of political and private economic obstacles – seeing the value of “prime suburban land” at risk if lower-income households were to be resettled outside the cities. Private developers and the savings-and-loan industry attempted legal obstruction. After the three small experiments were completed in 1938, the USRA was abolished (with the lesson that government policy should favor “safer” programs such as mortgage insurance for suburban housing and subsidized public housing for the poor in urban centers where they were already concentrated).³⁷

Even before World War II, then, governmental and market responses to the troubled condition of central cities, where stresses were magnified by the economic crisis of the Great Depression, set the stage for a particular pattern of metropolitan restructuring. A centrifugal pattern of population resettlement expanded the perimeter of urban areas, assisted by transportation access. The initial stage, however, kept the role of the employment center downtown – especially for upper-middle-class and upper-income households. The dispersal of homes from jobs meant that, for white-collar office workers, especially those with executive and managerial functions, departure from the central city at the end of the working day became more and more the norm, giving rise to more 9-to-5 business districts. Less-wealthy households then became relatively more residentially concentrated in the heart of the city. Income segregation placed higher social costs upon the core city, making the suburbs more of a refuge. Such dynamics were already in place by 1940. The following decades would see their power intensify.

For many Americans, World War II is viewed largely as a disruptive departure from the trends shaping the domestic social and economic landscape. But the 1941–1945 period has been identified by scholars as a critical era in US urban development patterns. The war effort was a powerful de-concentrating influence. Part of this was a “spread the risk” strategy, and part was a realization that the older industrial cities (such as Hartford and Bridgeport) had limited capacity to handle an influx of defense workers.³⁸

The risk-spreading consideration was acutely felt in the aftermath of the destruction of the Pacific Fleet in just a few hours at Pearl Harbor and

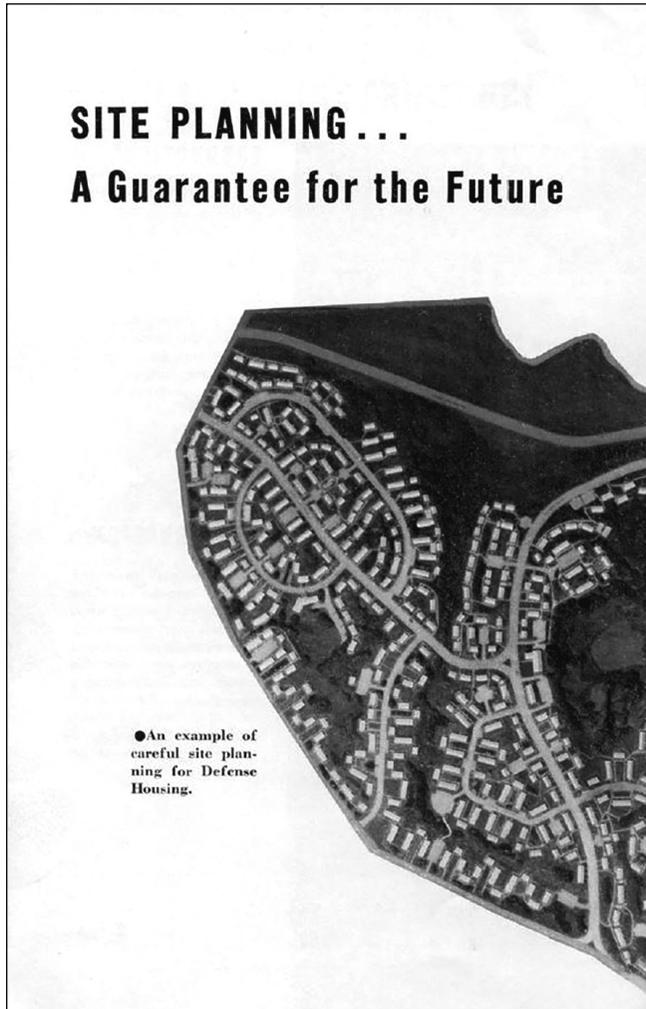


Figure 1.4 Defense Housing prefigures post-war suburbs

This site plan for Federal Works Agency housing during World War II illustrates the prototype of post-war suburban housing development: a residential monoculture, with cul-de-sac local circulation feeding an arterial collector road connecting to work centers and shopping outside the housing community. The low-density housing, with its dependence upon the automobile, was “ahead of its time,” in modeling what the suburbs of the 1950s and 1960s would epitomise.



Figure 1.4 Continued

widespread concern about German U-boat activity in the shipping lanes proximate to New York City. The War Production Board appointed by President Roosevelt in January 1942 elected to disperse matériel production by developing new plants in suburban areas, rather than retool existing and underutilized plants in the central cities. This stimulated new investment opportunities and expanded suburban economies around New York, Detroit, Baltimore, and Pittsburgh.

With the collapse of homebuilding during the Great Depression, and the diversion of resources to the war effort in the 1940s, urban housing shortages were endemic in the nation’s large cities. One symptom of the shortage was the imposition of rent control as an anti-war-profiteering measure in many places. Neil Leibowitz reviews the determination by the wartime Office of Price Administration that stabilizing rents would lower the cost of production

inputs, positively affect labor turnover, check popular unrest, and contribute to improved national morale. Pressure on the housing stock was immense. The counties surrounding the major California cities experienced two-year population increases of 130,000 in Los Angeles, 97,000 in San Diego, and 95,000 in San Francisco. Chicago's Cook County grew by 149,000. Fears were expressed that, unless the migrants were directed to the "geographic fringe" of the metropolitan area, the requirement for municipal services would break the cities financially.³⁹

Real estate boards across the nation mobilized to block rent control at the same time that they opposed the construction of "non-competitive public housing" in the cities. The Lanham Act in 1940 authorized some 700,000 units of housing to be built, and, in response to the siting of the defense industry plants and the resistance within established urban centers, much of this housing took the form of low-density suburban development, as illustrated in the Federal Works Agency pamphlet "Defense Housing 1941" (Figure 1.4). Focusing on the short-term effects of wartime price controls and subsidized workforce housing, the property industry encouraged conditions by which residential and job dispersions would, over time, compromise demand for its own fixed assets.

The reality of a two-ocean war shifted the gravity of industrial activity westward. Los Angeles and San Francisco, in particular, became key defense industry locations, along with San Diego and many southern and western areas where military bases were situated. In this case, housing followed defense jobs and military facility construction as well. Hall details how the US military had identified the strategic importance of the West Coast's ports as early as the 1920s.⁴⁰

Military contracting favored the "Sunbelt regions." During the course of the war, approximately 65 percent of all federal investments flowed to defense industries such as shipbuilding, ordnance, aircraft and parts, and related industries such as petroleum refining. Gregory Hooks and Leonard Bloomquist argue that federal investment expanded and modernized industrial plant and equipment in industries ranging from energy and munitions to aeronautics and electronics. At the end of the war, the federal government owned 40 percent of the nation's capital assets, much of which it then divested into the private sector.⁴¹

The process shifted the location of economic growth in the post-war period. These authors identify Los Angeles, Houston, Dallas-Fort Worth, Memphis, and Miami as the major beneficiaries over the quarter-century commencing 1947. The biggest "losers" in the regional rebalancing of this period were New York, Chicago, Pittsburgh, Boston, and Philadelphia. Markusen et al. present a mild corrective to the Hooks and Bloomquist analysis, noting that research and development spending boosted economic growth in states such as Maryland and Massachusetts. But, overall, the secular shift of advantage toward California, Texas, Florida, and other Sunbelt states – a process imprinted on the nation's economic geography by World War II-era decisions – is validated in the research by Markusen and her colleagues.⁴²

Thus, even before the much-analyzed post-World War II suburbanization, there was considerable momentum toward expansion at the perimeter of cities, and a direction of growth favoring the newer regions of the South and West over the large but aging cities in the nation's northeastern quadrant. The commuter framework of 9-to-5 downtowns was being erected, and the stage was being set for larger, automobile-oriented, multinucleate metropolitan areas in regions that were remote and sparsely populated in the first half of the 20th century.

Modalities of change

Cities are evolving organisms. Critical changes in recent decades have affected the relative competitiveness of particular cities, but the entire phenomenon of change is rarely considered in its full complexity. Every metropolitan area experiences, and must expect to continue experiencing, turbulent cross-currents of change. I propose that five fundamental forms of change are worthy of special attention, with the understanding that these forms of change are typically at work simultaneously and that they interact with each other. The five basic "flavors" of change are *cycles*, *trends*, *maturation*, *changes of state*, and *disruption*.

Briefly, the various forms of change can be described as follows:

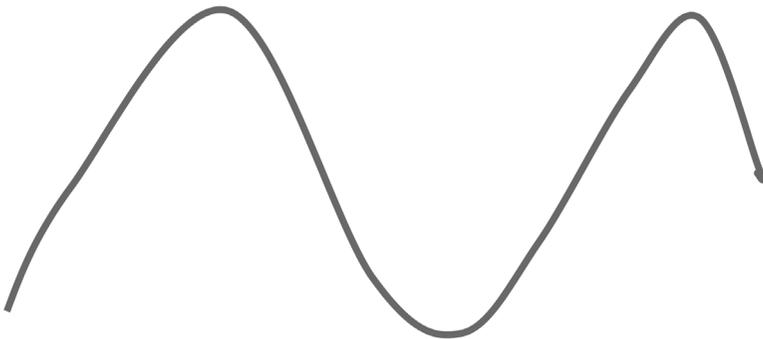
- *Cycles* are periodic fluctuations around some equilibrium point, where the critical measures are amplitude and duration of the fluctuation. The measurement and mathematics are modeled on signal theory. Its driving dynamic in market and general economic theory is the presumption of reversion to the mean when systems move out of equilibrium.
- *Trends* are long-term shifts in system variables, including durable changes in the quantity and quality of system components. The measurement and mathematics of trends are fundamentally modeled on classical Newtonian physics, using concepts such as inertia and momentum. Demography, technology, and industry/occupation structure are examples of variables subject to trend-like changes pertaining to cities and real estate markets.
- *Maturation* refers to the organic unfolding of system potential and adaptation to habitat. The normal path of change follows laws of biological and ecological science, frequently described by the sigmoid or logistics curve. Key concepts are resource availability and utilization, systems development and interaction, and sustainability. Like trends, maturation conceives of change as telic, i.e., directional; like cycles, maturation anticipates that change is not a "constant." Distinct from both cycles and trends, maturation is conceived of as inherently finite.
- *Change of state* denotes fundamental alterations of system conditions, which may be short term and reversible (but not necessarily so). The scientific model is drawn from molecular structure and chemistry, as for instance when a molecule retains its elemental structure while passing from a solid to a liquid to a gaseous state. Behavior is state dependent. Key concepts

for changes of state are critical thresholds, boundary conditions, triggers, and external pressures. Volatility characteristics may vary significantly depending upon state condition.

- *Disruption* involves a sudden, profound shock to a system that constitutes a radical challenge to system integrity. Disruptions may resolve into some degree of return to *status quo ante*, but may issue into some permanent and irreversible change requiring systemic reconceptualization. Risk managers sometimes refer to disruptions as “event risk.” Following Taleb, disruptions can be considered low-probability, high-impact events, dubbed “black swans.”⁴³ A coherent scientific model may follow the principles of particle physics, along the lines of nuclear fission or fusion. Accommodating disruptions into neoclassical economics may require reconceptualization at the level of Kuhn’s “paradigm shift.”⁴⁴

The five basic “flavors” of change are illustrated in the following figures. These are idealized forms, of course, but they depict the underlying patterns clearly. Associated with each graph are a few examples of how the changes appear in urban economies and real estate markets. As we proceed in our analysis, we shall see empirical evidence of these forces of change at work. Because of interactions, though, each basic form of change rarely follows the idealized shapes in these graphs, even if the driving force is often one dominant type of change.

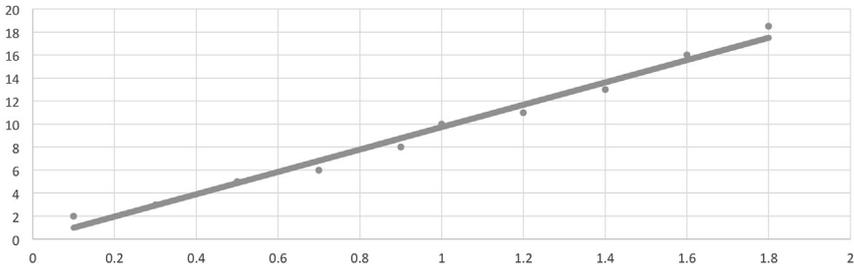
Each of these forms of change will be seen as relevant to cities. We will trace change as it influenced the emergence of 24-hour cities in particular, and deal with the related question about why most cities have not evolved to 24-hour



Cyclical change is a feature of all market-based economies. GDP, employment, interest rates, the stock market, and many other macroeconomic measures conform to this pattern. Real estate markets display a similarly recurrent exposure to cycles, measured by rents, prices, construction, occupancy rates – property market measures that are related to, but not identical with, the underlying economic cycles themselves.

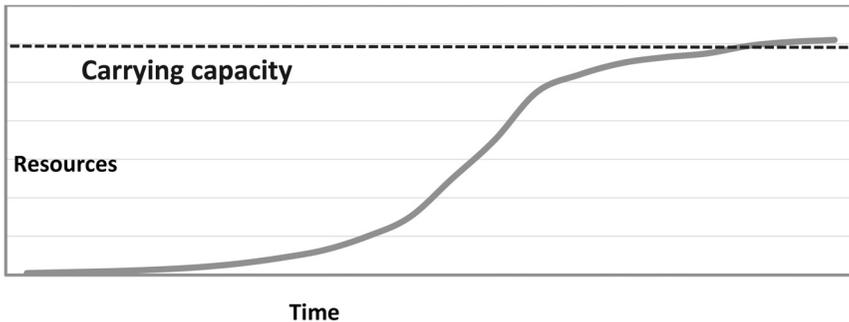
Figure 1.5 Cycles

status. Some may object that “evolved” is not the proper word, as it implies that, over time, cities as economic entities are inexorably moving away from 9-to-5 configurations toward more round-the-clock activity. Not only is there no evidence that such is the case, there are both theoretical and practical reasons to believe that such a universal tendency would not be expected.



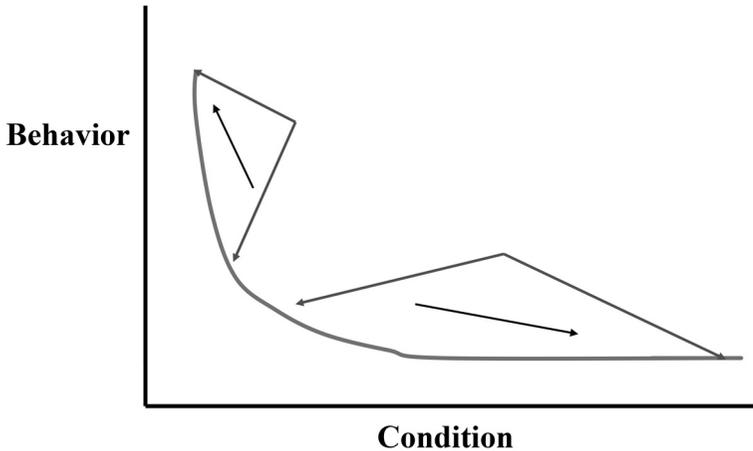
Long-term changes that display a persistent direction are common in economies and in real estate. Population growth, the move from blue-collar to white-collar work, the impact of inflation on pricing levels, the expansion of the inventory of residential and commercial property, and the aggregate value of real estate as an asset class are examples of long-term trends.

Figure 1.6 Trends



Maturation recognizes the relationship between internal dynamics and external constraints. Just as human beings (and all other organisms) balance a propensity for growth with genetic and environmental limits, so do cities and real estate markets. This can also be seen in the introduction of new products – whether consumer goods, financial products, or forms of real estate. Periods of slow growth, followed by acceleration, and finally a levelling off are a third fundamental pattern of change.

Figure 1.7 Maturation



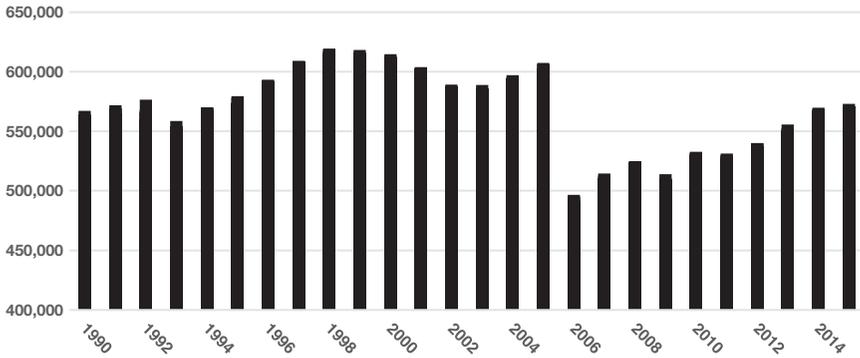
Economies and real estate markets show variable, not constant, elasticity over time. There has been much frustration in recent years that employment and earnings have not responded proportionately to monetary stimulus, for instance. In the real estate markets, we often note far different rent and price movements, dependent upon where the market stands relative to an “equilibrium range.”

Figure 1.8 Changes of state

Some reflections on theory

From a theoretic standpoint, evolution is not “telic”, or ends-determined. Evolutionary biologists, ever since Darwin, have pointed out that we live in a world where contingency and randomness are inescapable features. Evolution as classically understood proceeds by mutation (another word for “change”), with subtly differing organisms seeking to survive. Hence, the notion of “the survival of the fittest” remains the watchword for evolution in the popular mind, with overtones of inevitability, determinism, and even a kind of superiority for the “winners.”

All three of those telic presumptions must be called into question. Inevitability has been a feature of theories for centuries and has enjoyed something of a resurgence in our own time. Most of these theories might be characterized as forecasting out of the rearview mirror, or extrapolating pre-existing trends indefinitely into the future. One of the more famous examples of this, in urban planning circles, was an international conference gathered in New York in 1898 on the subject of horse manure. Transportation in the pre-automobile era was primarily horse-drawn. The mathematics of population growth, demand for goods and services requiring delivery, and the need for ever-enlarging cities to connect people to jobs led to an astonishing, disturbing, and yet apparently inescapable conclusion: by 1950, the pile of horse manure in the streets of New York would rise to a height of nine feet.⁴⁵



Singular events may suddenly and profoundly alter pre-existing patterns of change. Natural disasters such as storms and earthquakes, human interventions such as a terrorist attack and systemic financial failures such as the crisis of 2007–2010 are examples of such disruptive change. However, there are positive examples as well: the impact of the internet, the “green revolution” in food production, and the introduction of the standardized shipping container might be cited as “positive disruptions.”

Figure 1.9 Disruption

Malthus, in 1798, had also looked at two apparently inexorable facts: population growth proceeded on a geometric curve, while food production expanded in a linear fashion. His conclusion? Without the moral resolve to lower birthrates (by a variety of means), the growth of population would inevitably be checked by negative forces, namely, war, famine, and pestilence.

In our own times, critics of globalization have pointed to technology, communications, consumerism, transportation efficiency, and brand-driven capitalism as a confluence of forces inevitably driving toward worldwide homogeneity. Those more accepting of globalization as a phenomenon speak of the world as converging as a single market where the law of supply and demand drives advantage inexorably to low-cost producers. *New York Times* columnist Thomas Friedman wrote a best-selling book, *The World is Flat*, and followed up with *Hot, Flat, and Crowded*. Although Friedman earnestly appeals for changes in attitudes, policies, and behaviors, his basic thesis is that the path of history is one of convergence, a basic condition we are largely unable to alter.⁴⁶

Despite some resurgence in popularity, theories of inevitability are now mostly viewed with deserved skepticism. This is not just owing to the failure of confidently announced and apparently scientifically based predictions. It is owing to a change in the very way we think of science.

The Age of Enlightenment undergirded the optimism of “inexorable progress” as the basic arc of history. The sense of certainty, and the determinism

that was its intellectual foundation, owes much to one of the true geniuses of Western civilization, Sir Isaac Newton. The poet Alexander Pope proposed a couplet as Newton's epitaph:

Nature and Nature's Laws lay hid in night.
God said, "Let Newton be." And all was light.⁴⁷

Newton's laws of physics have been applied fruitfully as basic principles for centuries. Objects in motion tend to remain in motion; objects at rest tend to remain at rest – absent some external force. Force is equal to the mass of an object times its acceleration. For every action, there is an equal and opposite reaction. Newton famously articulated the principle of gravitation and used it to compute planetary orbits. His work in optics revealed, through the prism, that white light is composed of a spectrum of colors. His understanding of the principles of refraction led him to construct a telescope that uses mirrors, now known as a "Newtonian telescope," still being built today by civilian and military researchers. And Newton was, along with Leibnitz, the developer of calculus as a mathematical tool.

Applying Newton's work to the problems of thermodynamics, later scientists derived laws showing the conservation of energy and the irreversible pattern of entropy toward a constant state, entropy referring to the tendency of a system toward a condition of uniformity.⁴⁸

The power of Newton's work, and that of those who built upon it, was that it allowed predictability and hypothesis-testing to rule in the scientific realm. Laws of nature were truly laws: mathematically rigorous and objective tools derived from the empirical study of the world (the universe) that were powerfully explanatory. With the proper information and the proper application of the laws, outcomes could be anticipated and the truth of the laws could be validated by the ability to find events predicted by theory in the test of experiment.

At base, this meant that systems were deterministic.

In important ways, and with implications across all fields of knowledge, the Newtonian consensus in physics was compromised by scientific advances throughout the 20th century. In 1905, Albert Einstein published the theory of special relativity, with its famous equation $E = mc^2$, which announced the convertibility of energy and matter, a concept beyond Newton's theoretical boundaries. Time and space are seen as relative to each other, a particular departure from the classical Newtonian assumption of absolute space and time.

By 1916, Einstein had advanced a more general theory of relativity, which rethought the notion of gravity, recalculated such assumed "knowns" as the orbits of planets, and conceived of an expanding universe with characteristics incompatible with the mechanical balances assumed in Newton's order of things.

A generation of physicists pushed science in the direction of acknowledging that the same element of the material world sometimes exhibited the character of a particle and sometimes the character of a wave. They also wrestled with the idea that so-called “objective knowledge” disturbed objects in the act of observation. So measurement itself had to be considered inexact. Werner Heisenberg and Neils Bohr, between 1924 and 1927, articulated what came to be known as “the uncertainty principle” so closely identified with Heisenberg. In its weak form, that principle says we cannot simultaneously know the position and the momentum of a particle at any moment. As we cannot know all characteristics at any time, properties must be described as probabilities, or (somewhat negatively) as uncertainties. The strong form of the principle goes further: uncertainty not only resides in our capacity to measure, it is a feature of particles themselves. The statistical property of the standard deviation was introduced at the heart of the description of the physical world, and the familiar determinism of the earlier physics was eclipsed.⁴⁹

No one who has looked at, much less tried to work through, post-Newtonian physics would ever say it was neither mathematical nor rigorous.⁵⁰ On the contrary, even if indeterminate, the physics of Planck, Einstein, and Heisenberg, as continued by later scientists such as Murray Gell-Mann, Richard Feynman, Stephen Hawking, and Roger Penrose, have remained true to the standard that theory should be expressed in rules-bound math and be tested by its ability to anticipate as yet unobserved phenomena (i.e., predicting discoveries ranging from the bending of starlight around the sun (1919) to the recent (2012) confirmation of the existence of the previously hypothesized Higgs boson by scientists at CERN).

Applying theory to our practical issue: Cities, their forms and their performance

Why bother with this long discussion of changes in the physical sciences?

It is because physics has been the “hard science” model that is the gold standard that the “softer” social sciences – including economics and urban studies – have striven to emulate. The neo-classical economic models of Alfred Marshall, John Maynard Keynes, and even Milton Friedman attempt to create prediction of future observations by means of point estimates derived by analyzing variance from some point of equilibrium, in a mathematical extension of Newtonian physical science into the economic realm. Similarly, the standard model of urban spatial patterns for the second half of the 20th century was the Alonso–Mills–Muth model,⁵¹ whose conceptual substrate was the pattern of entropy drawn from the Second Law of Thermodynamics.

Under the post-Newtonian way of thinking, the outcomes of models are not deterministic but probabilistic. We see the results of economic thinking as encompassing a variety of behaviors, not a single correct answer. In particular, we can note that any model that incorporates the standard deviation as an

element in its mathematics should result in not one, but two correct answers. Why? Elementary statistics teaches us that the standard deviation is the square root of the “variance” in a set of data. And variance is the sum of the *squared* differences of each observation from the average. So equations employing these statistical concepts always implicitly consider terms at the power of two (x^2), the form of quadratic equations. And, in elementary algebra, such equations are understood to have as many solutions as the “power” of their variables.

If this all seems complex, that’s exactly the point. Physical science is increasingly appreciated as the study of complex systems, and economics – including urban economics and their physical manifestations in the built environment – are likewise conceived of as complex systems. Components are no longer analyzed as stand-alone elements best appreciated by being isolated for study. Rather, elements are considered as a network, where the individual components not only mutually define each other, but are defined, not as nouns (things), but as verbs (activities) that only reveal themselves in their interactions.⁵²

Such a perspective allows us to take a particularly open-minded approach to urban studies, to the characteristics of cities, to their trajectories of change, and to the properties of real estate markets that help us to measure physical elements in monetary terms. When we examine the changes that have resulted in 24-hour cities, we neither claim that such a result was inevitable, nor that all cities will (or even should) tend toward 24-hour-ness as the correct outcome of urban evolution. Moreover, though we will make claims that 24-hour cities are in some important ways superior to 9-to-5 cities, we must be careful to acknowledge that, in a complex urban network, we may find a “two-solution” result of our analysis – useful places for both 24-hour and 9-to-5 cities in a sustainable urban system.

We will, in other words, be taking seriously the idea of a taxonomy of cities. That means recognizing differences, but also recognizing enormous similarities. The similarities do not negate the differences, and biological taxonomy explicitly illustrates this difference–similarity combination. Take the degree of DNA shared between a variety of mammals. Domestic cats, for instance, share 90 percent of their DNA with humans. They share the same percentage of DNA with their feline cousins the leopard and the cheetah. But, taxonomically, it is quite easy to distinguish between *Homo sapiens* and any member of the family of *felidae*, the scientific name for cats. So, similarity and difference should be expected in our urban taxonomy, just as we find them coexisting in nature.⁵³

Within each type of city, we should also expect a reasonable amount of variation, just as we would expect that members of the same family would differ in height, weight, and the color of eyes and hair. Members of the class of 24-hour cities are not clones of each other; neither are the members of the class of 9-to-5 cities.

Finally, as we think about the evolution of cities, as the 24-hour character has been an emergent phenomenon, we should not discount the possibility that

this has morphed from a form that was once a 9-to-5 urban configuration. But, if that is a possibility, it should represent an evolutionary step of some significance, a large rather than a small step, and one that represents a “change of state” rather than merely a point along a general trend line.

Keeping this foundational discussion in mind, let’s proceed to apply the basic concepts to sets of actual US cities and their commercial real estate markets.

Notes

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- 3 Kevin Lynch, *The Image of the City*, Joint Center for Urban Studies, Harvard University and Massachusetts Institute of Technology (Cambridge, MA, 1960).
- 4 Sophocles, *Antigone*.
- 5 *Letter to James Madison*, December 20, 1787. In Clapp, p. 128.
- 6 *The New York Times*, March 17, 1964. In Clapp, p. 16.
- 7 William Julius Wilson, *When Work Disappears: The World of the New Urban Poor*, Knopf (New York, 1996).
- 8 Data are from the 2012 American Community Survey of the US Bureau of the Census, published in *American Community Survey Briefs: Poverty 2000 to 2012* and in the *Current Population Reports, Income, Poverty, and Health Insurance Coverage in the United States: 2012*.
- 9 Benjamin R. Barber, *If Mayors Ruled the World: Dysfunctional Nations, Rising Cities*, Yale University Press (New Haven, CT, and London, 2013), pp. 41, 178.
- 10 Edward Glaeser, *The Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*, Penguin Books (New York, 2011), p. 10.
- 11 Data from the Television Bureau of Advertising, *Televisions Basics*, accessed at www.tvb.org/trends/95487
- 12 See Robert D. Putnam, *Bowling Alone: The Collapse and Revival of American Community*, Simon & Schuster (New York, 2000), especially Chapter 13, “Technology and Mass Media,” pp. 216–246.
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- 14 *Ibid.*, pp. 242–243.
- 15 Cited in Ella Taylor, *Primetime Families: Television Culture in Postwar America*, University of California Press (Berkeley and Los Angeles, CA, 1989), pp. 28–29.
- 16 A introduction to and summary of the series is at www.avclub.com/article/how-the-honeymooners-invented-the-domestic-sitco-83668
- 17 Taylor, *op. cit.*, pp. 24–26, 40.
- 18 An introduction to and summary of the series is at www.imdb.com/title/tt0045406/
- 19 “The great trinity of Greek tragedians [Aeschylus, Euripidis, and Sophocles] . . . reveal how closely the fortunes of the arts were tied to the fortunes of the community.

- They show us the poet as the public man.” Daniel J. Boorstin, *The Creators: A History of the Heroes of the Imagination*, Vintage Books (New York, 1993), p. 211.
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 - 21 Angus Maddison, *The World Economy: Historical Statistics*, OECD Publishing (Paris, 2003). Data for the 19th century come from Nathan S. Balke and Robert J. Gordon, “The Estimation of Prewar Gross National Product: Methodology and New Evidence,” *Journal of Political Economy* 97:1 (1989), pp. 38–92. Accessed at <http://socialdemocracy21stcentury.blogspot.com/2012/09/us-real-per-capita-gdp-from-18702001.html>
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 - 31 Lincoln Steffens, *The Shame of the Cities*, McClure, Phillips & Co. (New York, 1904), republished in unabridged form by Dover (Mineola, NY, 2004).
 - 32 Robert A. Beauregard, *When America Became Suburban*, University of Minnesota Press (Minneapolis, MN, 2006).
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 - 34 Michael P. McCarthy, “Corrupt and Contented? Philadelphia’s Stereotypes and Suburban Growth on the Main Line,” in B. Kelly, *Suburbia Re-examined*, Greenwood Press (New York, 1989), pp. 111–118.
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- 44 Thomas Kuhn, *The Structure of Scientific Revolutions*, University of Chicago Press (Chicago, IL, 1962).
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- 48 See Peter Coveny and Roger Highfield’s discussion in *The Arrow of Time: A Voyage through Science to Solve Time’s Greatest Mystery*, Fawcett Columbine (New York, 1990), pp. 147–158.
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- 51 See, for example, James Heilbrun, *Urban Economics and Public Policy* (3rd ed.), St. Martin’s Press (New York, 1987), pp.124–134.
- 52 An excellent introduction to a difficult subject can be found in Melanie Mitchell, *Complexity: A Guided Tour*, Oxford University Press (New York, 2009).
- 53 A discussion of genetic (DNA) similarity across species can be found at www.quora.com/What-percentage-of-human-DNA-is-shared-with-other-things