

# REAL ESTATE ISSUES®

Published by THE COUNSELORS OF REAL ESTATE®

SPECIAL ISSUE

## GLOBAL CITIES IN AN ERA OF CHANGE®



A collection of articles inspired by **Global Cities in an Era of Change®**, an international Real Estate Symposium,  
presented by The Counselors of Real Estate in partnership with Stanford SPIRE and RICS  
at Stanford University

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We  
Proudly Dedicate  
The 2017 Global Edition of  
*Real Estate Isstues*  
to



## Bowen “Buzz” McCoy, CRE

Author, Teacher, Ethicist, Philanthropist  
Real Estate Counselor for the Ages

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Connected Citizens Enable 21<sup>st</sup> Century Urban Systems: Cities Powered by Rich Data and Smarter People

*Gordon Feller*

With the arrival of new and powerful technologies and the declining costs of these technologies, some new possibilities are emerging for cities and their transport systems. The Internet of Everything can benefit cities by connecting people, processes, data and things as everything comes online. This is creating unprecedented opportunities for organizations, individuals, communities and countries to realize dramatically greater value from networked connections — including economic growth and improvements to environmental sustainability, public safety, the delivery of public services and productivity. The potential here is for cities to become truly transformed. As user requirements evolve, buildings must adapt and change. Real estate professionals must take steps to transform the physical spaces of the future through technology innovation, delivering value-added, revenue generating services while streamlining the processes that create buildings and developments.

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*Howard C. Gelbtuch, CRE, MAI, FRICS*

Many of us make our living preparing forecasts of supply and demand, income and expenses, and the anticipated actions of buyers, sellers, lenders and government agencies. While the Stanford Symposium was enormously insightful, and certainly many of the topics discussed have already and will certainly continue to come to fruition, it begs the question, what can possibly go wrong along the way?

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*Robert S. Goldsmith, CRE, and Steven G. Mlenak*

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### Redefining Urban Mobility: Four Ways Shared Autonomous Vehicles Will Reshape Our Cities

*Ashley Z. Hand, AIA, LEED AP BD+C*

Transportation technology is evolving at an exponential rate and, for the first time since the advent of the automobile itself, we have a unique opportunity to completely rethink our cities as they are shaped by transportation networks. With the advent of autonomous vehicle (AV) technologies, and the proliferation of shared mobility, there has never been a moment as critical as now to envision the city of the future.

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*William P.J. McCarthy, CRE*

Smart growth refers to urban design and transportation planning agendas which its adherents believe create vibrant high density urban centers with an ever decreasing dependency on the automobile. Smart Growth is promoted as a panacea for an increasingly wide range of urban and social challenges, with its agenda now permeating many of the planning departments in cities and regional districts throughout North America. The contrarian view to Smart Growth is that it is little more than a cleverly marketed rehash and acceleration of control and containment urban planning strategies, with influence and power exercised by ideologically driven city planners, and self-serving politicians, and their supporters. The role of Smart Growth is central to any debate on what constitutes prudent and practical urban planning and the quality of life of its residents. The control purpose of this article is to try to quantify if actual Smart Growth civic results support its very premise and multitudes of promises, or not.

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### Raising the IQ of Smart Cities: Chicago's 'Array of Things' Urban Data Device

*Charles Noel Schilke, CRE*

How do we firm up the vague definition of "Smart Cities," and begin gathering the information specifically needed to implement this idea? In particular, how do we integrate multiple Information and Communications Technologies (ICT) and the Internet of Things (IoT) solutions in order to manage the assets of a city like Chicago? Chicago, the quintessential American city, is quickly becoming the nation's leading city for data analytics. Through the "Array of Things" (AoT), Chicago is applying data analytics to urban information collection to make itself the smartest Smart City anywhere.

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*Viktor Weber*

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*Jeffrey D. Fisher, Ph.D., Michael K. Lerg, and Demetrios Louzios, Jr., CRE*

Virtual technology is the latest overnight sensation to hit the market. And like many overnight sensations, it has been around for quite a while. One of the first commercial uses of virtual technology, then referred to as 3-D, was in video games over 30 years ago. However, the growth of virtual technology in the form of virtual reality, augmented reality and, the latest evolution, mixed reality have dramatically accelerated over the past few years. The miniaturization of components needed to put the power of yesterday's super computer in someone's pocket has provided the components needed for the hardware to catch up to the capabilities of the software and become more affordable. As a result, a range of industries have begun to develop uses for the technology. This article will explore the possible applications within the commercial real estate industry.

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### No Brainer: Three Easy Steps to Risk-Free OpEx Reductions And Municipal Asset Valuation Increases

*James Olin, CRE*

These days, city officials, finance officers and municipal asset managers everywhere are struggling to come to grips with two unavoidable realities: ever tightening budgetary constraints and aging government buildings badly in need of renovation and upgrade. It's a dilemma that municipalities all over the country wrestle with every day. Government buildings are in desperate need of improvements necessary to simply preserve valuations, let alone increase them, and yet there is often not enough money in the operating budget to do what must be done. Nevertheless the need to maintain and somehow increase asset valuation is unrelenting, and as municipal governments continually seek to become financially stronger with better credit rating levels, valuation of assets will have a greater and greater impact on the rating indexes for local governments. So what's the solution? After years, sometimes decades of grappling with this seemingly intractable predicament, some municipal asset managers have awakened to the fact that it may be over their heads. Literally.

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*Casey Pipes, Esq., CRE, and Kirk Matti, Esq.*

Social media has come a long way in the past 10 years. What started as an on-line social network for a college campus quickly moved mainstream. In the early years, social media could be ignored by real estate developers as a place best suited for vacation photo sharing. That has all changed. Today, social media is a constant source of news, information, and public commentary. Social media focuses and drives public opinion, and it has become the biggest influencer of traditional news outlets while, almost simultaneously, rendering them less relevant. Like it or not, social media is here to stay and it is already changing the way we all do business in the land use and development side of the real estate world.

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*Peter Shannon, CRE*

Learning-capable cognitive software and other automation technologies are shaping how and where companies choose to operate and how they design environments for productivity. New business models are rapidly taking shape to exploit automation and artificial intelligence, enabling companies to launch new products and services in ever-shorter timelines. The increased velocity of business requires companies to create real estate portfolios that are as nimble as their business strategies. Recognizing that technology-driven disruption will impact workforce needs across many industries, many — if not most — corporate real estate teams will need to rethink their real estate with an eye to future business models and talent requirements.

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### London After Brexit

*Richard Barkham, Ph.D., CRE, Dennis Schoenmaker, Ph.D., Siena Carver*

As a former imperial capital, London has had global significance for about 300 years, but over the last 30 it has seen particular success. Although its global role as a financial center and business management hub are generally held up as the key reasons behind its success, there are many more qualities that make London a preeminent global city. For some, the recent Brexit vote was a signal from the rest of the country that London's dominance needs to be kept in check, that the financial industry should not be given preferential treatment or incentives, and other industries and regional centers need to get a larger slice of the investment 'pie.' Seven months on, we are starting to see whether these effects will actually materialize. However, in the long run, the impacts of Brexit will depend less on the immediate effects of economic uncertainty (which is likely to span at least two years whilst negotiations take place), but on the ongoing ability of London to attract and support global businesses. In this article, the authors explore what these core strengths of London are, before assessing the current and likely impacts of Brexit in the longer term.

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A strong economy or a stable lifestyle: Which scenario is preferable?

*Hiroyuki Isobe, CRE*

Japan's GDP has fallen since 1996, whereas the United States' has grown twofold and China's has increased twenty times during the same period. Although Japan is currently ranked third next to China in GDP, Japan's nominal GDP actually remains at 23 percent of that of the U.S. and 38 percent of that of China. Does it mean that Japan's economic presence within the globe has substantially decreased? Will it be weakened further? Does Japan still need to enjoy further growth? Isn't Japan already in a position to be able to enjoy a fairly matured level of growth among developed countries?

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How Risks are Shifted Within the German Real Estate Market

*Nico B. Rottke, Ph.D., CRE*

The current interest rate environment in the European Union creates the following situation, which can be described best as a "wall of equity meets a wall of debt": Real estate projects, which could not have been realized/financed several years ago, are financed today using favorably priced equity, hybrid and/or debt capital. Because of steadily decreasing bank loan margins, loan-to-value or loan-to-cost ratios exceed the post-finance crisis level of over 80, sometimes 90, percent of the investment volume — while still receiving very favorable terms, particularly in the area of "senior stretch loans." Ever more crucial for success is the product, the piece of property, itself.

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Water in the West  
*Robert E. Dietrich, CRE*

Will the West run out of water? Are changes needed in regulations? How will they be implemented? These are some of the questions that are being discussed in California and the Western U.S. In this article, Dietrich addresses the issues involved in the water situation, and provides some insight on how the water problem will be resolved.

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Public Trust: Toward Building A Park And Open Space Legacy

*Cassandra J. Francis, CRE*

Interest in, and use of, the Public Trust Doctrine has reached unprecedented levels recently in response to the growing threat that urban growth poses for parks and open spaces. The Public Trust Doctrine forces governments holding land assets in trust on behalf of the public to balance their short-term interests against the long-term protection of irreplaceable parks and open space resources. Lawsuits aimed at protecting the public trust have increasingly been used by advocates to force local and state governments to carefully consider the competing interests at work in cases of proposed alienation or change of use of park land and the impact on future generations.

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*Victor Calanog, Ph.D., CRE, Lloyd Lynford, Hsiao-shan Yang, Ph.D.*  
Location matters for how commercial real estate will perform over time. This statement will seem painfully obvious to industry practitioners, who may argue that (aside from timing and luck) location is the only thing that matters. However, in an age where capital flows across national borders relatively easily; when physical locations seem “optional” for a mobile workforce connected by the internet — does location still matter? And by how much? In this paper the authors investigate just how much location-specific factors influence commercial real estate performance, if at all. In the second part of this article, the authors investigate whether location matters as much for “global cities” — cities perceived to be more connected to global investment flows and a mobile workforce. Somewhat counterintuitively, submarkets — the proximate neighborhoods where specific properties are located — matter even more for global cities, suggesting that cross-border capital flow and a mobile workforce actually magnify the importance of location instead of diminishing it.

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#### It's a "Small World"...With Big Economic Changes *K.C. Conway, CRE*

Today's global economy is at an inflection point not dissimilar to that experienced at the onset of the industrial age or end of World War II, requiring massive reconstruction in Europe to rebuild a sustainable peace. The question that needs to be answered in advance of another period of isolationism that will inevitably lead to another world war type conflict is: How do nations collaborate and reconstruct a new model that promotes growth beyond today's narrow band of industrialized nations? In essence, what is the modern-day Marshall Plan (European Recovery Plan) for a 21<sup>st</sup> Century Disruptive Technologies era? (Think of it as an “Emerging Markets Economic Participation Plan.”)

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#### Challenges and Opportunities Facing the Future of Our Cities *George T. Vallone, CRE*

It's no secret that the primary driver of value in real estate is directly linked to location. Lifestyle and housing preference decisions follow a selection process which drives market demand. Consequently, understanding those market preferences lead directly to the highest value locations. This article delves into the challenges and opportunities of urban redevelopment using Hoboken, N.J., as the backdrop.

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#### 24-Hour Cities: Real investment performance, not just promises

*Review by Peter C. Burley, CRE, FRICS*

In this review, Peter Burley, CRE, feels *24-Hour Cities* by Hugh F. Kelly, Ph.D., CRE, is a wonderfully comprehensive — and generally enjoyable — read. And, Hugh Kelly has a decidedly skilled and elegant hand at covering the material. Burley believes he is quite certain that the material will remain useful for some time to come. Kelly reminds readers in more than one place that “a list of ingredients does not constitute a recipe.” Kelly offers a full-flavored, sit-down, multi-course meal of form and function, detail and design, ebb and flow, success and failure of the American urban environment.

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#### The Human City: Urbanism for the Rest of Us *Review by Roy Schneiderman, CRE, FRICS*

In this review, Schneiderman discusses Joel Kotkin's *The Human City*. Schneiderman felt that while the book presents plenty of interesting insights as well as many statistics you won't find in the popular press, it was heavy on narrative and data. Kotkin repeatedly and reasonably, makes the claim that people ought to be able to choose the type of housing and living arrangement that is most appropriate for themselves at different points in their lives. But the book fails to make the case to support that claim. Questions as to why some people might prefer “X” to “Y” or “Z” are not deeply explored. And thoughts about how to possibly get “the best of both worlds” in urban, suburban and exurban environments are not particularly well developed.

# *Editor's Note*

BY JOHN HENTSCHEL, CRE



*“Although no one has a crystal ball, it is, nonetheless, important to be able to predict the future as it is the foresight and anticipation of what is to come that underlies and guides all decision making.”*

CHANGE — LIKE DEATH AND TAXES — IS CERTAIN and inevitable, so much so that it is even a fundamental premise of economic and valuation theory. Although no one has a crystal ball, it is, nonetheless, important to be able to predict the future as it is the foresight and anticipation of what is to come that underlies and guides all decision making.

Historically, cities have been the hub of human activity and the wellspring of ideas and innovation. According to the United Nations, the trend toward urbanization is expected to continue, and by the year 2050, 66 percent of the world's population will be living in cities.

In Spring 2016, The Counselors of Real Estate co-presented a symposium at Stanford University entitled Global Cities in an Era of Change 2016. This landmark conference examined how many facets of the global real estate environment are collectively reshaping how people live, work, shop, play and, most of all, interact not only with each other, but with their physical surroundings and the inanimate objects within them. Close attention was paid to the ever escalating pace of ground breaking innovations and technologies; the accompanying, and often disruptive business models that ensue; the evolving means of communication and transportation; and Big Data and the Internet of Everything. The implications are enormous and have the potential to alter spatial patterns and relationships and transform the placement, design and function of buildings; even

challenge traditional perceptions about, and the very meaning of, location.

As a corollary to this symposium, *Real Estate Issues* has prepared this Special Edition which focuses on cities and how not only real estate practitioners, but citizens, business and civic leaders, as well as public officials, can and should prepare to address the challenges and capture the opportunities that will certainly arise in the wake of such monumental changes. As a preface, for those who were unable to attend the symposium, this edition begins with a brief synopsis which summarizes many of the symposium's presentations. As customary, the edition concludes with reviews by CREs Peter Burley and Roy Schneiderman. The reviews are of two prominent publications that address urban issues from somewhat different vantage points — *24-Hour Cities: Real investment performance, not just promises* by Hugh Kelly, Ph.D, CRE, and *The Human City: Urbanism for the Rest of Us*, by Joel Kotkin.

In between, the editors have organized the feature articles into topical sections that examine how:

- Change is influencing and altering urban systems and forms
- Technology is being deployed to create “smart cities”
- Governments are managing and sustaining physical and financial resources

## EDITOR'S NOTE

- Markets and economies are being affected by and responding to change
- Cities around the globe are coping with and adapting to the new order

The contributors have done an excellent job weaving an intricate and integrated tapestry that describes the host of challenges and opportunities that confront cities, suggesting useful strategies to address and capture them.

Some of the articles are supplementary or complementary and are best read in tandem. For instance, while Ashley Hand considers the effect of autonomous vehicles and ridesharing services on urban mobility and transportation networks, Goldsmith and Mlenak discuss the effect that such innovations will likely exert on the future of parking garages. While authors Fisher, Lerg and Louziotis discuss the applications of virtual, augmented and mixed reality in the design; development; marketing and management of buildings, Peter Shannon explores the effect of automation and artificial intelligence on the workforce and the workplace from a micro-economic perspective; as KC Conway contemplates the effect of these same disruptive forces from a global, macroeconomic point of view.

Many of the articles tackle a common theme — connectivity among people, processes, and data — albeit from different angles. Charles Schilke examines one city's application of the analysis of Big Data gathered from the Internet of Things to make decisions about its municipal systems; Viktor Weber proposes a framework and media platform to implement a citizen-inclusive planning process in order to facilitate the creation of a "smart city"; James Olin looks at how city asset managers are gathering data from "smart buildings" to inform decision makers and reduce operating costs; Casey Pipes and Kirk Mattei discuss how community groups have discovered the effectiveness of social media as a tool to effectively inform, organize and mobilize citizens in support of or opposition to development proposals in their neighborhoods; while Gordon Feller contemplates the potential for all of the foregoing to collectively improve environmental sustainability, public safety, productivity, and economic prosperity.

Two authors take up the topic of managing and sustaining scarce public resources. Robert Dietrich

discusses solutions that drought plagued communities have developed to conserve, allocate, manage and distribute the most essential of all physical resources — water; while Cassandra Francis presents an informative look at the Public Trust Doctrine and its effect on balancing short term development interests against the long term protection of open space when governments consider the sale of public lands.

Contributors Calanog, Lynford and Yang take a critical look at the nature and meaning of location and the relative importance of local submarkets in a transnational, connected world of 3-D printers, drones, same day delivery service, and autonomous vehicles. Meanwhile, developer George Vallone examines how changes in lifestyles and housing preferences over time have influenced location decisions, urging land use officials and developers to commiserate and cooperate in the development of novel regulatory regimes designed to deal with today's urban challenges and capture emerging redevelopment opportunities.

On the global stage, Barkham, Schoenmaker and Carver analyze the influence that Brexit may ultimately exert on property markets in the city of London, while Hiro Isobe examines the effect that Japan's aging and declining population may have on the stature of Tokyo as one of the world's most populous global cities; each assessing their respective city's continued ability to attract international investment in the future. As Augusto Carosi explores the cause and effect of a housing deficit in Argentina and the opportunities that are emerging for developers, Nico Rottke discusses how a low interest rate environment has affected capital flows and project financing in Germany and how developers and their projects have fared as a result.

Finally, espousing slightly contrarian points of view, William McCarthy examines whether "Smart Growth" as a planning strategy has lived up to its promise to enhance the quality of life for residents, or has merely been a control and containment strategy employed by ideologically driven urban planners, while Howie Gelbtuch ponders things that could possibly go wrong when humans attempt to predict the future.

In his 1970 book *Future Shock*, futurist Alvin Toffler observed that the relationship between people, places,

## EDITOR'S NOTE

things, organizations, ideas and time form the fabric of all social experience. Aptly predicting the pace of change would progressively accelerate over time, Toffler proposed that managing change requires converting the possible into the probable in pursuit of the preferable.

We at *Real Estate Issues* hope the information presented in this edition will enhance the clarity of your crystal ball so that you may not only effectively manage, but prosper from the looming and inevitable change that is to come.



JOHN HENTSCHEL, CRE  
EDITOR IN CHIEF

# Keynote Address with Chip Conley

BY JULIE L. MELANDER, CRE

**Speaker:**

**Chip Conley**

*Head of Global Hospitality & Strategy, Airbnb*

**Moderator:**

**Elizabeth Youngblood Lambird**

*Executive Director, Stanford SPIRE*

“DRAMATIC DISRUPTION IN THE HOSPITALITY business” is what Chip Conley, Head of Global Hospitality & Strategy described as the cause and the effect of his company, Airbnb, when he spoke to the **Global Cities in an Era of Change** audience at Stanford University on March 31, 2016. This forward thinking symposium was the collaboration of The Counselors of Real Estate, Stanford SPIRE, Stanford’s real estate alumni association, and RICS, a London-based professional organization of 118,000 property professionals.

Conley delivered the keynote address and talked about how Airbnb is changing the way we travel in the 21<sup>st</sup> Century. He shared what he sees as the three elements of a successful disruptive innovation and how Airbnb is shaking up the hospitality industry and changing the paradigm of travel — how “we do it” and what it means to travel.

Starting out in business in the early 1980s, Conley was a land broker in the orange groves of what is now Silicon Valley, and he spent a few years working for a real estate developer before he decided the hotel business is where he would be the most successful. In 1987, at age 26, he bought his first hotel in the Tenderloin district of San Francisco (mostly renting rooms by the hour at the time), and he built that investment into the second largest boutique hospitality chain in the nation with 52 boutique hotels, named Joie de Vivre. Twenty-four years after that first acquisition, he sold a majority interest in the company to John Pritzker of the Hyatt Hotels. Conley’s very last hotel project was the Epiphany

## About the Author



**Julie L. Melander, CRE**, has been a member of The Counselors of Real Estate® since 1999. Her real estate career has been in the financial services industry, serving clients ranging from commercial and investment banks to private developers and public agencies with investment advisory services on such matters as new development feasibility and capital structure to distressed debt acquisition and resolution. She has an MBA in finance from the University of Chicago, a bachelor's degree in Finance from Indiana University and is a licensed real estate broker

Hotel in downtown Palo Alto which he sold to Larry Ellison for *three times the cost at completion*. He retired at that point.

But three years ago, he received a call from Brian Chesky, co-founder of Airbnb, who asked him to be his mentor and, “take their little millennial tech company and turn it into a mainstream hospitality giant.” He did a few weeks of research and agreed to join the team of smart young professionals working at Airbnb — who understood technology but not the least about hospitality — for 15 hours a week. Within weeks, he was asking Brian, “Did you think I said 15 hours a day?” He was a 52-year old “intern” in a tech company — just like the Robert DeNiro movie *The Intern*.

Airbnb is a dramatic “disruption” in the hospitality business. Conley spoke of creative disruption throughout his talk. Disruption leads to innovation. And innovation does not typically arrive without foreshadowing. In hospitality, Holiday Inn was a big disruptor with industry-changing innovation in 1953. The precursor was the Interstate Highway system, built after WWII by Eisenhower to connect the country. People wanted to go and move and see new things. They took to their cars and hit the highway. The hospitality industry at that time was small little properties with a wide variety of quality standards.

## Keynote Address with Chip Conley

The Holiday Inn chain delivered a standardized predictable place to stay across the country.

In the 1970s, timeshares were the disruptor in hospitality, providing travelers with participation in the real estate. By the 1970s, the public had become aware that real estate could be valuable. They were interested in how they could make some money in a real estate deal while enjoying a vacation. This was the foreshadowing of the timeshare craze.

Then in the 1990s, the emergence of boutique hotels came from the traveler's desire for an "experience" — something that connected the traveler to the place and the neighborhood — getting away from the extremely reliable, cookie-cutter hospitality product of prior eras. A book titled *The Experience Economy* summarized what the traveler wanted and was a foreshadowing of the home-sharing phenomenon. Vacation Rentals By Owner (VRBO) came on the stage in 1995, introducing the disruptive idea of sharing your home with strangers. The idea of "traveling like a local" appealed to many travelers. Craigslist also appeared in 1995 with similar ideas. And Europeans were "home swapping" as early as the mid-1950s. So, innovation and disruption is often signaled by a foreshadowing. It's a lot easier to see it looking backward, but the key is to be able to see it in real time and act on it.

The second element of successful disruption is that it recognizes a human need that isn't being addressed. In hospitality, it's been the need for clean, reliable predictable accommodations, then it was the need for "an experience" which the boutique hotel satisfied. Now the need Airbnb is filling is the need to "belong somewhere" and have it be affordable. Airbnb is in 34,000 cities in 191 countries.

Airbnb took these ideas of "traveling local" and finding something unique and created a better marketplace. And it really started with a couple of **air mattresses**. Brian Chesky and co-founder, Joe Gebbia, were graduates of Rhode Island School of Design and just starting out on their careers in San Francisco. The rent was quite steep on their San Francisco loft apartment, so they came up with the idea to offer short-term living quarters to attendees of the Industrial Design Conference in October 2007. It was accommodations on an air mattress on the floor of their loft, cereal breakfast, and a unique business networking opportunity for attendees unable to find

conventional rooms in a saturated marketplace. They advertised as Air Bed & Breakfast, which became *AirBedandBreakfast.com*, which was shortened to *Airbnb.com*. By 2008, they brought on a third co-founder, Nathan Blecharzyk, and focused on high-profile events where alternative lodging was scarce and expanded the offering to other young friends in the marketplace. They took a business plan based on how many air mattresses they calculated were available and grew it to now three million homes available to book across 191 countries.

Successful disruption thrives on feedback: 75 percent of Airbnb guests provide feedback. That feedback gives Conley information to teach his thousands of hosts "hospitality" which he defined as "a generosity of spirit from the heart." This compares to about 10 percent feedback for a typical hotel company. With constant feedback, hosts are especially motivated to provide the best hospitality they can.

The third element of successful disruption is that, over time, the "establishment" accepts the innovation. Intercontinental Hotels Group bought the boutique Kimpton Hotels. A Hyatt affiliate owns Joie de Vivre now. Starwood developed the W Hotels. Now the big corporate chains are moving into the home-sharing arena. Accor owns Oasis Collections, an international home rental business. Hyatt bought the high-end home-share company called "onefinestay." They are all calling Conley, talking collaboration and recognizing that home-sharing is a long-term trend. Even Morgan Stanley now has a corporate account with Airbnb. There is a trend to a *global nomad worker* — someone who can and does go anywhere in the world to work. So these travelers want to "belong" for their time there.

Corporate acceptance came after it was established that Airbnb wasn't a competitor to the top chains. Airbnb is meeting the needs of a new marketplace — those who wouldn't travel or who would stay with friends and family and those who have an extended stay need that wasn't being met.

An important part of Conley's job is also working with landlords and communities to smooth this "disruption." Equity Residential, the country's largest residential landlord, is now exploring partnering with Airbnb to come up with rules for hosts to allow this business model in their communities.

## Keynote Address with Chip Conley

Conley shared with the audience more details on his approach to the business as Global Head of Hospitality & Strategy. One of his top priorities is to make sure Airbnb is a responsible participant in the hospitality industry. Airbnb works with hosts to ensure occupancy taxes are paid to relevant governing bodies and that hosts are aware of and abide by all regulations. But as he said, "Orville Wright did not have a pilot's license. We know that. Henry Ford didn't actually have a driver's license." Airbnb has had to think about and participate in the discussion of how they want to see the home-sharing business regulated.

In addition, Conley wants Airbnb to collaborate with the industry. Airbnb shares information with industry data compilers like STR, and they are participating with marketing of locations which benefit tourism. STR took a look at the Airbnb data and studied how Airbnb was impacting the hotel industry in Manhattan. They concluded that it was having almost zero impact — 31 percent of Airbnb guests surveyed worldwide say they either would not

have come or would not have stayed as long in the city without Airbnb. They are meeting a need that wasn't being met — longer term, more affordable accommodations.

And of course, security is of utmost importance. Airbnb has over 250 people in their Trust and Safety Division. George Tenet, the head of the CIA under George Bush, is an advisor to the company. The division's charge is to determine when people should not be a host or a guest and act on that. They have also obtained and carry full liability insurance and \$1 million of property insurance per stay.

Airbnb's ultimate goal is to be the Super Brand of Travel. With constant feedback from guests, Airbnb will personalize and customize the traveler's experience with lists of possible accommodations, restaurants, activities, personal tour guides, everything to make the travel experience all that the guest needs and desires. ■

# Keynote Address with Luís Bettencourt, Ph.D.

BY HUGH F. KELLY, Ph.D., CRE

**Speaker:**

**Luís Bettencourt, Ph.D.**

*Professor of Complex Systems, Santa Fe Institute*

**Introduction:**

**Howard C. Gelbtuch, CRE**

*Principal, Greenwich Realty Advisors, Inc.*

DR. LUÍS M.A. BETTENCOURT IS PROFESSOR OF Complex Systems at the Santa Fe Institute (SFI) in New Mexico. His academic background is in theoretical physics, but he has done significant work on economics and urbanization in recent years. To some, this may seem a surprising shift in research emphasis, but the link is more natural than it might appear.

Dr. Bettencourt and his colleagues at SFI have been leaders in a scientific exploration known as complexity theory. They approach the economy itself, and cities, as complex adaptive systems.<sup>1</sup> Most of us would agree with the “plain English” interpretation of that view: cities are complex, and they do adapt to change over time. But the idea of complex adaptive systems is incredibly richer than it appears on the surface.

Complexity theory involves an interdisciplinary synthesis to describe cities in quantitative and predictive ways, informed by the growing availability of empirical data worldwide. So-called “Big Data” is invaluable to this effort. The research also includes the modeling of innovation and sustainability in developing human societies.

Dr. Bettencourt is particularly focused on the interplay between information, structure and scale in setting the properties of diverse complex systems.<sup>2</sup>

Personally, I had the privilege of participating with Luís Bettencourt, Goeffrey West, José Lobo, Michael Batty and another twenty or so scholars at a colloquium at Arizona State University.<sup>2</sup> That meeting in 2013, brought together specialists in urban history,

## About the Author



Hugh F. Kelly, Ph.D., CRE, is the principal of Hugh Kelly Real Estate Economics, since 2001 a private consultancy serving investors, lenders, and real estate services firms. He is currently a Special Advisor to Fordham University and a member of the Board of Regents of Realtor University. He has published more than 300 articles in industry and peer-reviewed academic journals. From 1984 through 2016 he was a faculty member at New York University's Schack Real Estate Institute, first as an adjunct professor and after 2003 as a Clinical Professor of Real Estate. Hugh was Chair of The Counselors of Real Estate in 2014, and his book 24-Hour Cities: real investment performance, not just promises was published by Routledge in 2016.

urban planning, archeology, sustainability and other fields. To my knowledge, this was the first time that real estate, as a scholarly discipline, had a seat at the table for such interdisciplinary work. Dr. Bettencourt’s participation in the Global Cities conference at Stanford indicates that real estate’s important role in the study of cities is now finding more general acceptance.

Dr. Bettencourt opened his talk in Stanford with the famous image of the “earthrise,” the view of our planet as seen from the moon. This image, like many views from space (especially nighttime satellite images), draws attention to the many “bright spots” of human habitation and suggests the importance of interconnectivity of the globe. The idea of cities as a “system” is not a particularly novel one. Research into urban hierarchy goes back at least into the 1930s,<sup>3</sup> and yet the way we think about systems today has undergone a sea change since then.

One of the biggest shifts was triggered, as Dr. Bettencourt noted, when Jane Jacobs pointed out that the problems of cities were not primarily engineering problems.<sup>4</sup> Generations of city planners (both before and after Jacobs) approached the issues of cities as

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though the city were a kind of machine that could be functioning well, or not so well. Transportation, zoning, density, crime, education and so forth were treated as elements that could be addressed the way that a mechanic might: identify the problem, define it, isolate it and repair whatever malfunction existed. Jacobs saw things differently, where the socio-economic fabric of a city was best conceived almost organically, and the community was the organism that generated vitality, or disease if it were impaired.

The basic conceptual model of the city is a crucial public policy concern that increases in importance as urbanization becomes more widespread. It is now well understood that the world passed a threshold during the past decade when, for the first time in history, the majority of the global population could be found in urban areas.<sup>5</sup> Dr. Bettencourt pointed out that there are now 4,000 cities around the world with populations of 100,000 or greater. Demographers now count 538 metropolitan areas with populations of one million or more.<sup>6</sup> Large city growth will be particularly evident in the developing world — particularly Africa and Asia in places like Lagos, Nairobi, and Mumbai — but countries like the United States that are already developed and largely urbanized will find that growth in and around cities will be shaping the socio-economic future as well. Along the path of this growth (a greater number of large cities, and an overall tendencies of cities to increase in size), we will likely find a rearrangement of urban systems.

In this context, Dr. Bettencourt spoke about “power laws” that he and other researchers have identified that sort out the impacts of size and density on factors like infrastructure, relative costs and economic output. Infrastructure, for instance, grows as cities “scale up,” according to a mathematical relationship where the exponent of growth is “sub-linear” (1-density), meaning that infrastructure capacity increases at a slower rate than population size. Economic output, however, increases at a “super-linear” rate (1+density), meaning that larger cities tend to be more productive because of increased social/economic interactions.<sup>7</sup> Of course, both the infrastructure cost and the economic output effects impact cities at the same time. So there is a tradeoff in transportation costs and gross city product,<sup>8</sup> and such a tradeoff can be expected to influence real estate values.<sup>9</sup>

Physics has provided the conceptual framework for many studies of location in space, including urban geography. One of the most powerful relationships in classical physics is the Second Law of Thermodynamics. According to this law, heat flows from a hotter body to a cooler one — inexorably. In any process, some energy is wasted as heat is lost. A quantity called “entropy” increases. For many years, the scientific consensus held that this was an irreversible condition, a diffusion of energy that marked a movement from order to disorder. Mountains erode. Stars die out. Living beings decay. Monuments go to ruin. The arrow of time runs in one direction — toward a final equilibrium.<sup>10</sup>

Why does this matter at all for cities and for real estate? For approximately fifty years the dominant theoretical model for city growth was the Alonso-Mills-Muth framework (AMM). A brilliant and coherent intellectual structure, AMM provided a way to understand — and to predict — why and how cities tended to grow at their perimeters, as those who could afford to, sought the greatest amount of land (and house) in a metro area for the least amount of price. At the same time, AMM provided an elegant explanation of how and why those who could not make such a location choice had to share more costly land closer to the center by crowding at greater and greater densities to minimize costs. In a word, AMM helped explain both sprawl and inner city impoverishment in an urban equilibrium model that was driven by entropy.<sup>11</sup>

Researchers in complexity science, however, discovered in a variety of natural processes that there is a phenomenon of “emergent organization” that is not consonant with the hypothesis of constantly increasing entropy in systems. In apparent chaos, patterns emerge, often strikingly so. In apparently random flux, recurrent configurations arise. And, as cities sprawl toward their perimeters, nodes are formed within the arc of the metropolis and — most surprisingly — the pattern of the “hollowing out of the center” can, and in some cases does, reverse itself and downtowns revive after having been written off as unsalvageable.<sup>12</sup>

Dr. Bettencourt recommended to the audience that they look at the February 2016 report of the President’s Council of Advisors on Science and Technology.<sup>13</sup> The report details the developing

## Keynote Address with Luís Bettencourt, Ph.D.

science of cities, focusing on subjects ranging from information sharing to transformations in urban development districts. Cities are about connections, and Dr. Bettencourt stressed that it is the exchange of skills and ideas, an exchange enhanced by diversity, leads to improvements in urban quality of life for such areas as education, health, economics, and recreation. Real estate is a crucial component of the complex urban system, and our understanding of real estate within the urban system is sharpened by greater insights derived from technology and big data. Technology may have its disruptive impacts, but on the whole it plays to the strengths of cities. Much of the wealth generated by cities over history has flowed precisely from their role as laboratories for technological innovation.<sup>14</sup>

Admittedly, the benefits and costs of urbanization have been spread unevenly. Cities are not all one-of-a-kind and it is unwise, for instance, to generalize as if Austin and New York City can be conflated by a law of generalized density. But it would also be a mistake, Dr. Bettencourt argued, to think that cities are therefore not systematically understandable, and that it is useless to try to predict the course of 21<sup>st</sup> century urbanization. On the contrary, he concluded, we have a profound need — becoming ever more urgent — to understand the places that more and more of the earth's population calls home, using the wealth of data already available and soon to come to make life better for humanity. ■

### ENDNOTES

1. There is a growing bookshelf of writing about complexity science, which covers fields from physics to biology to information technology, as well as economics and urban studies. An early discussion that is highly readable is M. Mitchell Waldrop's *Complexity: The Emerging Science at the Edge of Order and Chaos* (Simon & Schuster Touchstone, 1992). A more recent treatment, also eminently accessible to non-scientists, is Melanie Mitchell's *Complexity: A Guided Tour* (Oxford University Press, 2009). For those seeking more detail and a specific focus on cities, there is Michael Batty's *Cities and Complexity: Understanding Cities with Cellular Automata, Agent-Based Models, and Fractals* (MIT Press, 2005).
2. An important article covering such topic, jointly authored by Dr. Bettencourt, José Lobo, Geoffrey West, Dirk Helbing, and Christian Kuhnert, was published in the Proceedings of the National Academy of Sciences (104:17; April 2007). The subject of the "metabolism of cities" has been discussed for decades, at least as far back as Abel Wolman's work in the mid-1960s. See Wolman's article with that title in *Scientific American*, Volume 213, Pages 179-190 (September 1, 1966). Those wishing to access an overview of some of these scholars in a video format may find Geoffrey West's TED Talk at [http://www.ted.com/talks/geoffrey\\_west\\_the\\_surprising\\_math\\_of\\_cities\\_and\\_corporations](http://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations); Luis Bettencourt has number of videos available. There is a 2016 talk at the University of Michigan at <https://www.youtube.com/watch?v=0xyfc6kDof4>, and a 2014 talk at the Universidad Nacional Autonoma de Mexico at <https://www.youtube.com/watch?v=vp6eKjQHN10>. Michael Batty's talks can also be found at <https://www.youtube.com/watch?v=cdZYDKQmias> ("Smart Cities and Big Data") at University College London, and his TEDx Talk on "Cities 2.0" at [https://www.youtube.com/watch?v=qOOh\\_oSwySw](https://www.youtube.com/watch?v=qOOh_oSwySw)
3. Walter Cristaller, *Central Places in Southern Germany*, (1933; issued in translation by Prentice-Hall in 1966).
4. See Jane Jacobs, *The Death and Life of Great American Cities*, (Vintage Books, 1963).
5. It is even more vital, given population projections through the middle of this century. The United Nations estimates that we are at about 54% urban in a world population of 7.4 billion currently. But we will be at 67 percent urban for a 2050 population of 9.7 billion. That means the world's urban population will expand from 4 billion now to 6.5 billion at mid-century. That is a 63% increase in urban dwellers in just 35 years. The implications for real estate, as well as for the economy and society generally are profound.
6. 2016 population estimates for urban agglomerations from Thomas Brinkerhoff, City Populations, <http://www.citypopulation.de/world/Agglomerations.html>
7. One might call the negative impacts sublinear growth instances of "bad density" and superlinear growth effects of "good density." Congestion would be an example of bad density. The concentration of innovation would be an effect of good density.
8. For a technical discussion of the theory behind this, econometrically minded readers can see Dr. Bettencourt's working paper, "The Origins of Scaling in Cities," Santa Fe Institute Working Paper 2012-09-014 (2012) accessible at [www.santafe.edu](http://www.santafe.edu).
9. This is consonant with my own research findings on U.S. cities. See Hugh F. Kelly, et al., "Twenty-four Hour Cities and Commercial Office Building Performance," *Journal of Real Estate Portfolio Management*: 2013, Vol. 19, No. 2, pp. 103-120, and Hugh F. Kelly: *24-Hour Cities: real investment performance, not just promises* (Routledge, 2016).
10. See Peter Coveney and Roger Highfield, *The Arrow of Time: A Voyage through Science to Solve Time's Greatest Mystery*, Fawcett Columbine (New York, 1990)
11. The above brief description hardly does justice to the Alonso-Mills-Muth framework, which served to provide a rational basis for planning development patterns, transportation needs, land use choices, and other urban issues for many decades. Edwin Mills, one of its central architects, did acknowledge the limitations of AMM late in his career, but it has nevertheless been a singular contribution to urban studies and continues to have significant predictive power.
12. Again, for the technically minded, see Michael Batty, "Cellular Automata and Urban Form: A Primer," *Journal of the American Planning Association* 63, pp. 266-274 (1997); M. Batty & Y. Xie, "Self-Organized Criticality and Urban Development," *Discrete Dynamics in Nature and Society* 3, pp. 109 – 124 (1999).
13. Report to the President: "Technology and the Future of Cities," Executive Office of the President, Washington D.C. (2016). Original report, originally accessed at whitehouse.gov, is no longer available from original source and has been removed. PDF, accessed January 30, 2017, is available at [http://www.cre.org/wp-content/uploads/2017/01/PCAST-Cities-Report\\_-\\_FINAL.pdf](http://www.cre.org/wp-content/uploads/2017/01/PCAST-Cities-Report_-_FINAL.pdf)
14. For more on innovation districts, see Bruce Katz and Julie Wagner, "The Rise of Innovation Districts," accessible at <https://www.brookings.edu/essay/rise-of-innovation-districts/>

# Urban Infrastructure and Sustainability

BY ED FRIEDRICH

**Speakers:**

**Don Clark**

*Principal, Cathexes*

**H. Kit Miyamoto Ph.D.**

*CEO, Miyamoto International*

**Steven Straus**

*President, Glumac*

**Moderator:**

**Ed Friedrichs**

*Friedrichs Group and Partner, Donald J. Clark Group*

**RESILIENCY AND SUSTAINABILITY ARE KEYS TO creating smart cities for the 21<sup>st</sup> century and beyond.**

*Creating a collaborative environment among all stakeholders, the Developers, Architects, Engineers, City Officials and Staff, as well as the community at large, is the key to success with such a large, complex project.*

The panel uses Reno, Nevada as the example of a city in the midst of reinvention. Each member of the panel, including the moderator, are part of a team that has designed a \$1.2 billion project for a seven-block portion of the city center that they believe will be a model of resiliency and sustainability that other cities will be challenged to emulate. This approach to planning, infrastructure development, conservation and municipal collaboration is unique.

During boom times in Reno, beautiful suburban homes and shopping centers flowed south, north and northwest, but large sections of downtown remained blighted. The 2008 recession hit Reno as hard as anywhere in the country. About 10 years ago, Don Clark, an architect and developer, began strategic planning for an area just west of Virginia Street, the main north/south axis through Reno, called "West 2<sup>nd</sup> District." Project planning took a hiatus until one and a half years ago when it began again in earnest.

Clark knew the approach to getting such a massive project accepted, funded and developed had to be

## About the Author



**Ed Friedrichs** completed his undergraduate degree in pre-architecture at Stanford University in 1965 and received his Master of Architecture degree from the University of Pennsylvania in 1968. He joined Gensler (now the largest and most respected architecture, design and planning firm in the world) in San Francisco in 1969, opening the firm's Los Angeles office in 1976. In 1995, he was appointed President and, in 2000, Chief Executive Officer of the firm, leading its development as one of the most successful and influential design firms in the world.

Since moving to Reno in late 2014, he is working as a development partner on the West 2<sup>nd</sup> District, led by the Don J Clark Group.

He is a co-chair of the Reno Streetcar Coalition, which is providing leadership to construct a streetcar line connecting the University of Nevada Reno with downtown, mid-town and the convention center along Virginia Street.

different. The few endeavors that were attempted in post-recession times did not come to fruition, leaving the city, which had committed to tax increment financing redevelopment bonds, deeper in debt and development-shy. But better times and an aggressive economic development effort in Northern Nevada has attracted many new employers to the community. This has diversified the economy and promises 55,000 new jobs over the next five years.

The area of this ambitious development, which has a six- to seven-year build-out horizon, is ideal for redevelopment. It is adjacent to the casino and entertainment core down to the Truckee River and the desirable Riverwalk district. In addition to proximity to the University of Nevada at Reno and I-80 corridor, the property is close to the best public high school in the Washoe County School District. Saint Mary's Medical Center is three blocks north. A relatively new Triple-A ballpark is six blocks east. Today, the redevelopment area is characterized by vacant and blighted properties and run-down weekly motels, a throw-back to the days when Nevada was

## Urban Infrastructure and Sustainability

known as a quickie divorce state, the only requirement being six-weeks residency. As a private development, the group has acquired the majority of the property.

Because of Reno's history and financial situation, the conventional method of using tax-increment financing (TIF) to bond against future tax revenues to put in infrastructure and acquire land is not available. As Clark considered the project, the idea of utilizing TIF funds was virtually impossible because of the city's current debt load. Instead, the development group and partners are investing in the infrastructure upfront, taking on the risk and realizing reimbursement only when the project generates actual increased tax increments. Because it's a blighted area, the district qualifies for some New Market Tax Credits as well.

"As you do an urban project, there is incredible complexity," Clark said. "We are embracing the complexity. Our confidence in the vision, the strength and diversity in Reno's new economy, and the collaboration with the city, convince us we will be recover our investment down the road. We are also working with the city to shape the expenditure of the tax increment beyond our needs toward investments that raise the value of the surrounding community."

Clark described the project as a "totally different animal than normal development, as we construct this mixed-use area that will support 2,000 new residential units, 450,000 square feet of new office space, 350,000 square feet of retail space and two hotels. Many of the structures incorporate a mix of uses vertically — not just horizontally — with retail at street level, often with office for a few floors, then residential above. This has required innovative approaches to the ownership and governance of these complex buildings."

"We're not designing an isolated enclave, but rather carefully linking the district with the rest of the city," Clark said. "We're focused on creating enough density to make the economics work well, but not oversaturating the land. We're incorporating public spaces that are pleasant and enhance the quality of life for people who live, work, visit and shop in this dense area to make it an attractive destination for people throughout Reno."

From the beginning, the group has worked with service providers, first responders and other agencies

to develop a plan for relocating the 200 to 300 residents and transients living in weekly motels and blighted buildings that will be torn down.

As Clark explains, "It's not a heavy lift financially for us, and it's the right thing to do. But it changes the political environment at the same time it changes the social infrastructure. Traditionally, developers tend to focus only on what they're doing and not understanding what it rubs up against. That tends to create isolation, preventing the creation of a high-functioning community. Opportunities are lost."

"We're dedicated to looking at the broader infrastructure outside of our boundaries and how it affects the people on the periphery," he said. "In addition to the City of Reno, we see residents, the labor unions, the school district, the university, the economic development people, NV Energy and our state legislators as stakeholders. We treat them as partners."

"As it relates to communications, security and safety, we know our systems will go through a refresh about every five years," Clark said. "All of these technologies will have a next generation before we're done building. We and our partners are designing infrastructure for the future, cognizant of the fact that energy, data, security and water technology, for example, will evolve and become more efficient. We're not trying to solve the finish line; we're creating a context that allows the district to continually grow."

Among the key partners on the project is Miyamoto International, an earthquake and structural engineering firm that operates worldwide and has been on the ground immediately after major earthquakes in Haiti, Nepal, China, New Zealand and Ecuador, among other locales. Its CEO, Dr. H. Kit Miyamoto, espouses the philosophy: "We don't build one-earthquake buildings; we build buildings that will remain in operation after a major seismic event."

Miyamoto explained that Reno is in a high-seismic zone — the equivalent of San Francisco or Los Angeles. He said the Reno project is taking the long view as it pertains to resilience and sustainability.

"While developers need a return on investment, they know that investing in preventing possible business interruption pays for itself in the long-run," Miyamoto said. "Building codes are meant to save lives. They're doing a good job of that, but our goal is

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to save buildings as well — making them resilient and functional the day after a major seismic event.”

With Reno in a high-risk seismic zone, Miyamoto is working with the city to utilize performance-based design in seismic engineering that goes beyond code, including diagonal shock absorbers that disperse seismic energy, a technique used by NASA for more than 40 years.

“Performance design does not have to cost more and, in fact, will result in net less cost overall,” Clark said. “We’re raising the bar in design as an economic model. There may be a little more cost up front, but this approach will reduce costs in other areas in the long run. It’s a very different mindset than most development that’s focused on cutting costs everywhere.”

Glumac, a sustainable mechanical, electrical, plumbing and infrastructure firm on the West Coast, is designing the building systems for the massive project. Steven Straus of Glumac said it is possible to have an urban eco district that actually generates more energy than it uses and consumes more waste than it produces.

“That’s the future of where developments need to go,” Straus contends. “Global growth and the stress it’s putting on our natural resources demand that we come up with different solutions.”

He explained the goal in Reno is to introduce energy-efficiency measures to reduce energy consumption by 50 percent by incorporating the right elements of building mass, glass, mechanical and electrical systems, daylight harvesting and natural ventilation.

A characteristic of an eco-district is the connection of all the buildings, allowing the structures to operate interactively with one another — some buildings dumping heat into the system while others are pulling it out. Wind technology, battery storage and thermal

systems future-proof the development while reducing the overall energy consumption.

Another innovation is the development’s approach to water. The conventional approach would be to tap into the municipal water source and dump all waste into the community sewer system. It’s expensive for the city to build infrastructure to support such a massive project.

“Our approach is developing a ‘living machine’ system that treats waste water,” Straus said. “That system uses recovered water for toilet flushing, irrigation and cooling. Reverse osmosis creates potable water. It’s cost effective and costs less to develop. We will reduce water consumption compared to a conventional building by more than 50 percent, and the municipality doesn’t have to build as much infrastructure because we’re building it on site.”

In addition, having a central utilities plant for heat and cooling dramatically reduces energy consumption. That energy-load reduction improves the economics of the project and reduces costs for residents as well, according to Clark.

“Reno is on a population-growth trajectory, but this project, as aggressive as it sounds, will represent less than 10 percent of the demand for this kind of housing over the period of development,” Clark said. “We’re doing proactive risk management by not over-leveraging the project by constructing only a few buildings at a time, continually raising the bar of value as we go.”

“This is a chance to create a wonderful city core. At the same time, we think this is a great example of how a city can demonstrate resiliency and sustainability. We believe what we do in Reno will influence other West Coast cities and cities in other parts of the world, and we truly hope that it will be the model for future development in Reno.” ■

# Steering Capital to Build Sustainable Cities for the Future

BY MARTIN BRUEHL, FRICS

## Speakers:

**Philip Barrett**

Risk Officer, Pramerica Real Estate Investors

**Frank Billand, Ph.D., FRICS, CIO**

Member of the Management Board,  
Union Investment Real Estate

**Jeff Jacobson**

CEO, LaSalle Investment Management

**Robert White, Jr., CRE, FRICS**

Founder & President, Real Capital Analytics

## Moderator:

**Martin Bruehl, FRICS**

Managing Director, Union Investment Real Estate

As URBANIZATION CONTINUES WITH UNPRECEDENTED pace, demand for affordable and resilient buildings and infrastructure is growing rapidly. Sustainability is not simply being more environmentally friendly. It is an approach to a number of phenomena with profound implications for land and the built environment. For real estate, being a highly competitive and capital intensive industry, steering capital to build sustainable cities creates significant challenges. Speaking at the Global Cities Symposium at Stanford University, leading investment decision makers of funds totaling \$150 billion in assets under management, discussed how cities might attract the long term capital needed to address ongoing environmental, social, and governance ("ESG") issues. Focusing on long term outcomes as opposed to the "feel good," politically expedient, short term results was also discussed. The panel, which I moderated, also featured Philip Barrett, managing director at Pramerica Real Estate Investors and global chief investment risk officer; Dr. Frank Billand, CIO, FRICS, and member of the management board of Union Investment Real Estate; Jeff Jacobson, CEO of LaSalle Investment Management; and Robert White, Jr., CRE, FRICS, founder & president of Real Capital

## About the Author



**Martin Bruehl, FRICS**, is a Member of the Management Board at Union Investment Real Estate, a leading institutional manager of open-ended funds in Germany. He heads the international real estate investment business and oversees retail fund management. Martin's professional background is in appraisal and capital markets advisory, and prior to joining Union Investment he has worked for several international consultancy firms. He served as the 2016 President of RICS.

Other major themes are responsible investment, both sustainable and ethically, as well as the recognition of international standards created in collaboration with other professional bodies around the globe.

Analytics. This article provides some background to the panel discussion and summarizes its major themes.

## SUSTAINABLE GROWTH

As a profession we were challenged last year by leading economist Dr. Larry Summers to do more to drive sustainable growth.

The World Bank is predicting the population will rise by at least 40 percent in 14 of the 20 most populated cities in the world between 2015 and 2030. This figure is staggering. With such accelerating change, cities are taking on ever greater importance. They are our most enduring and stable social structures and have become the world's dominant demographic and economic groupings. The population of the greater Mexico City region is larger than that of Australia. And Super Cities are the destination of over 50 percent of foreign capital invested in the top 30 global cities.

Meeting the needs of new communities is a key challenge facing our profession, and attracting investment is vital to meeting it. This means creating whole cities, not individual homes. We need to ensure sustainability is fully considered across the whole real

## Steering Capital to Build Sustainable Cities for the Future

estate lifecycle.

### INVESTMENT DYNAMICS – DENSITY

So how do we attract investment to build sustainable cities for the present and future? The good news is that cities provide attractive investment opportunities. Growing urbanization is positive for investors who look for density in urban spaces, because of the amount of activity you can have in any given area. If you have either a tall building, or one with flexible multi-use space, combined with appeal to high-end potential tenants, the rent is driven up.

Through density, resources can also be used more efficiently. For instance, the sharing economy works best in this scenario: if a central business district (CBD) is walkable, you reduce automobile use. Capital values have also been much stronger in walkable CBDs over the past 10 years than non-walkable ones.

With land in strong demand, adaptive reuse becomes valuable. From renovating brownfield, to reusing and repurposing rather than dumping, land shortages make these approaches worthwhile. Because there is more money available in compact spaces, investors can also afford to put money into innovation in the urban environment.

According to Jeff Jacobson, “If the right environment is available for investors, then billions will be invested into cities without any further subsidies.”

Of course, density also comes with its challenges. Larger urban populations put more people in danger in the event of something catastrophic occurring, whether it's man-made or a force of nature. The World Bank has noted that many of the largest cities in the world are located in deltas and are prone to floods and other hazards. As these cities grow, an ever greater number of people and properties are at risk of disaster.

Deteriorating infrastructure is also a threat to these growing communities, as is the increasing gap between rich and poor. All of these problems will be magnified by poor governance.

### “WHY DO YOU BUY LAND? BECAUSE THEY’RE NOT MAKING ANY MORE OF IT.”

In the simplest terms, investors are evaluated on investment returns relative to the risk taken. So, despite societal pressures to invest more sustainably, investors look to see if it provides attractive risk-

adjusted returns.

Very few funds will accept lower returns and higher risk simply to invest more sustainably. This is a particular challenge in today's distorted low interest rate environment that creates a fight for real assets and increasing demand, fueled by multiple geopolitical and economic uncertainties and is compressing returns further and further.

Reviewing the data for capital values and office buildings in the U.S. provided by Jeff Jacobson, three major factors are influencing capital values:

1. Demographics. As emerging economies are urbanizing, in developed countries there is a sea change in how people want to live within their environment. Millennials in general live and work differently than their predecessors. They would rather not be in a car and avoid living in the suburbs. They are willing to give up space to achieve this. This is also happening with aging baby boomers who want to move out of the suburbs and back into the city. Wherever you are in the world, people are moving into cities.
2. Technology. With technology clusters in cities, ecommerce changing retail patterns, workplace connectivity, and globalizing trade, culture and business, more affluent people are being attracted to ever-denser cities.
3. Urbanization. In both emerging and developed economies, urbanization is creating a positive network effect across social and economic vectors.

High demand and shortage of land in dense cities are creating strong incentives for investors to place their money in these centers.

### TECHNOLOGY AND FUNCTIONAL OBSOLESCENCE

While technology is an incentive for investors in growing cities, technological change is also increasing the speed of functional obsolescence. Thus, sustainability needs to be considered from the point of view of technology.

A few years ago, people were talking about the death of office and retail space because of advancing technology. But Philip Barrett noted the, “benefit of collaborative use,” and the nature of humans as social beings, which has prevented this from occurring.

## Steering Capital to Build Sustainable Cities for the Future

However, Barrett flagged other disruptive technology that, when it starts, will have a major impact. Technology such as driverless cars has the ability to free up large amounts of real estate, particularly in the U.S. where office buildings have large parking lots attached.

Protecting buildings from functional obsolescence requires two approaches. The first is using land where there is demand and will be for a long time. In the U.S., for instance, we are witnessing the death of the suburban office building. Instead, offices need communities around them.

The second is adaptability, because the technology we use today will be leap-frogged in 10 years or less. We must instead focus on buildings that can adapt to different functions or needs.

### SUSTAINABILITY IN INVESTMENT DECISIONS

Currently, for most investors, sustainability is a piece of what they do. They're interested and focused on it, but at the end of the day the priority is investing for clients and getting the risk-adjusted return.

Jacobson noted that he only has one investor who currently prioritizes sustainability objectives even if it means a lower return. Ultimately, the source of capital and time horizon of the investment determines whether one can afford to be sustainable.

For Union Investment Real Estate, the policy to include sustainability criteria in investment decisions began a few years ago. With a plethora of different sustainability ratings globally, they introduced a simple scoring system. Frank Billand explained the buildings are scored on a green/orange/red scale. It must rate in green or only slightly into the orange to commit to invest. The only exception is an older building that can be brought up to standard post-acquisition, through replacing the façade for instance.

But fundamentally, sustainability criteria are important to investors if they're important to their clients. "Real estate is about the income stream," explained Barrett. "... Investing in places where people want to live or work." So, if the clients and tenants see the benefit, so will investment funds.

### FROM 'DOING GOOD' TO ECONOMICS

Luckily for this dynamic, more people do want to invest sustainably. The problem, as described by Robert White, is that, "the investment universe of

sustainable buildings is still very small." In the U.S. for instance, only 13 percent of commercial buildings are certified as sustainable. In major German cities, this figure is 5.6 percent. Certification tends to come on 'trophy' buildings, on the headquarters of major companies such as the big four audit firms and major law firms, rather than as a general rule.

There's also a big issue with data. With over 200 different certification and rating regimes globally for sustainability, comparability is difficult. On top of this, many of the certified buildings are newly constructed, so it's hard to judge the long term effects over their life-cycle.

Nevertheless, there's a change from investing in sustainable buildings because investors want to "do good," to doing so because of customer supply and demand. It's now starting to make economic sense.

A study of BREEAM certification looked at the effect of sustainability on investments. It found 80 percent had superior risk-adjusted returns and superior stock market performance for the REITs. In 90 percent of cases, sustainable practices led to lower costs of capital and lower default rates for lenders. This is all good news for the business case. The problem is that it's difficult to quantify exactly how much sustainability increases a building's value.

However, this all refers to major capital investment decisions. There are smaller things investors and tenants can do to make buildings more sustainable. As an example, retrofits, such as LED lighting which provide quick payback. Cooperation from tenants is vital here.

### STANDARDIZATION OF CERTIFICATION

At all levels of investment, being able to measure sustainability is important. Real estate has a big challenge ahead with the built environment contributing up to a third of global greenhouse gas emissions. Assets worth U.S. \$158 trillion will also be in jeopardy from climate-related disasters by 2050 without preventative action (World Bank 2016) strengthening the business case for energy efficiency measures by building capability among valuers (appraisers) and increasing market confidence in climate change commitments by supporting internationally standardized and vertically integrated measurement and reporting.

These steps will facilitate more consistent

## Steering Capital to Build Sustainable Cities for the Future

measurement of sustainability around the world exemplified by newly developed International Property Measurement Standards (IPMS). By applying these standards, the measurement of carbon emission targets becomes more comparable.

Professional standards give the industry the confidence to commit to sustainability targets. Real estate asset owners, investors and related stakeholders must recognize they have a clear fiduciary duty to understand and actively manage environmental, social, governance and climate-related risks. It needs to become a routine component of business thinking, practices and management processes.

### INCREASING SUSTAINABLE INVESTMENT

It's clear that, as an industry, we still have a long way to go to steer capital to build the sustainable cities of the future.

Money will flow to sensible opportunities and environments designed to be economically vibrant. Smart regulation is at the heart of making this a success, but there is too much regulation that creates unintended consequences.

Capital is expensive, and the more time you spend reaching a deal, the harder it gets. As Barrett noted, "time kills deals." By removing roadblocks — this doesn't necessarily mean deregulation — decisions can be made more quickly. This requires better cooperation between local authorities and private capital, working together to create public spaces and infrastructure. Sustainable cities can be built this way.

A vast majority of institutional investors have Corporate Social Responsibility (CSR) policies for

investment. The demand is there, but CSR and returns aren't always aligned. When underperforming, it isn't CSR that will save the organization.

### OUTPERFORMING ON THE GLOBAL STAGE

So, what do cities need to outperform on the global stage in terms of sustainable investment? Panelists participating in this session agreed on three key elements:

1. Good infrastructure, particularly public transport in all its forms, to encourage more sustainable and affordable travel options.
2. Good planning that is thoughtful but not overly rigid. Again, adaptability is important.
3. Education. Almost all cities have strong relationships with universities to attract knowledge-based workers. But a big Achilles' heel has been the primary and secondary level. Great education at these levels is essential to retaining a skilled population.

The panel also concluded that responsible action in real estate markets needs to become 'business as usual,' helping to drive prosperity, innovation and investment. Bringing sustainability to the forefront is a challenge, especially in times of artificially low interest rates and the consequential global compression of real estate returns, but one that is necessary for the future of the industry and the planet. We can only make this change with creativity and collaboration. ■

# Keynote Conversation with Sam Zell

BY ED FRIEDRICH

**Speaker:**  
Sam Zell  
*Founder/Chairman, Equity Group Investments*

**Moderator:**  
Ed Friedrichs  
*Friedrichs Group*

**CHANGING DEMOGRAPHICS AND GLOBAL ECONOMY IS**  
*creating opportunities and pitfalls for commercial real estate and consumerism*

**EF: How do you see demographics changing society, real estate, consumerism and investment opportunities?**

**SZ:** We're in the middle of one of the greatest demographic transformations in history. I graduated from the University of Michigan on June 10, 1963. By June 18, I was married. One year later, 95 percent of everybody we interfaced with was married and some had children. Think about what that means. By the time that engineer graduated in the '60s, he'd probably be married and living in a single-family home in ticky tackyville in the suburbs, and he'd go to work at the suburban campus of a big corporation. As an example, in 1965, Motorola built a huge campus 35 miles northwest of Chicago. By 1995, that campus was only 40 percent occupied and Motorola was renting 200,000 square feet of office space in downtown Chicago so the company could attract workers.

This demographic shift has enormous implications for cities, real estate and the economy. A 21 to 30 year-old who was once buying diapers is now buying lattes for about the same per-person cost. For 25 years, we built 1 million single-family houses a year. Since 2008, we've only built 500,000 houses a year. We've eliminated half a million new homes, and along with them the expenditures of new furniture, new lawns, new everything, and that money is being redirected to places like Gold's Gym and Starbucks.

## About the Author



Ed Friedrichs completed his undergraduate degree in pre-architecture at Stanford University in 1965 and received his Master of Architecture degree from the University of Pennsylvania in 1968. He joined Gensler (now the largest and most respected architecture, design and planning firm in the world) in San Francisco in 1969, opening the firm's Los Angeles office in 1976. In 1995, he was appointed President and, in 2000, Chief Executive Officer of the firm, leading its development as one of the most successful and influential design firms in the world.

Since moving to Reno in late 2014, he is working as a development partner on the West 2nd District, led by the Don J Clark Group.

He is a co-chair of the Reno Streetcar Coalition, which is providing leadership to construct a streetcar line connecting the University of Nevada Reno with downtown, mid-town and the convention center along Virginia Street.

My company, Equity Residential, is the largest owner of multi-family housing in CBDs (central business districts) in America. When we went public in 1993, our primary product was suburban garden apartments. At the time, the definition of a successful garden apartment project was one with expressway visibility. Today, the measure of success of an apartment building is its walk score. How many steps to Starbucks? How many steps to the gym? How many steps to the subway?

This is a changed environment. Young people are getting married later, and the fertility rate is lower. So they have enormous disposable incomes that the generations before them never had. Capital is being spent differently. Car ownership among younger people is going down, while the impact of technology is going up. Take Uber as an example. All these things are radically and rapidly changing the environment and how we as real estate people need to respond.

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**EF: Are we seeing the same trends in developed and emerging markets?**

**SZ:** We're seeing these trends everywhere in the world. Fifteen years ago, Mexico had a fertility rate of 5.5. Today it's 2.5. India had a fertility rate of 7 or 8, and today it's closer to 2. Each year, many countries in the developed world will have fewer people in December than they had in the previous January. This is a worldwide phenomenon that, to some extent, is related to the delivery of information which is educating people to what may be defined as a better life.

The rise of the middle class in emerging markets, which occurred from roughly 1995 to 2008, was part of a cycle that pumped enormous amounts of capital and foreign investment and liquidity into those markets. There was a significant movement from poverty to the middle class. Unfortunately, that's starting to erode. A country like Brazil, which had the highest percentage of conversion to the middle class of any country, is sliding back into unemployment and poverty.

**EF: Other than demographics, what core elements impact resilience in U.S. cities?**

**SZ:** It starts and ends with the word leadership. To the extent that there is leadership in a community, there is progress. You look around the country and you can see the strong leader who is having an impact on his or her city and the weak leader who is kicking the can down the road. We certainly have more than one example of both in the United States today.

Geography is very important. Until a year ago, Houston was an exciting place to be. That's changed. On the other hand, Boston has become a giant magnet, just like Silicon Valley.

**EF: What are the characteristics of leadership that are going to help cities become more resilient and thrive?**

**SZ:** When I think about the United States, I think about where I want to invest. I would probably identify Seattle as the #1 market. It has all the elements for success, including barriers to entry. There's more water, and there are more bridges and more opportunities to fail in Seattle than almost any other city in the country. That creates scarcity, and scarcity creates a very healthy environment for real estate owners. Seattle has done a fabulous job of

attracting and accommodating industry. The ability for Amazon and other companies to develop these huge campuses couldn't have happened without leadership and significant local support.

Another city I think is in great shape is Dallas. Dallas has massively diversified over the last 25 years. The city's very libertarian environment makes it an attractive place to move. In a market like Dallas, there are few barriers to entry. Before I got into the public company business, I was a buyer and seller in Dallas and rode the cycles. But if you own a public company, the name of the game is consistency, transparency and predictability, and you don't get credit for one-time gains. Today, I own no real estate in Dallas.

New York is one of everybody's favorite markets. But it's a very, very difficult market. As in Dallas, there is no shortage of developers, and a single event can trigger a reaction in the market that can negatively affect the developers and the city. Somebody, for example, sold an apartment in New York for \$100 million; that's \$10,000 to \$12,000 a square foot. So developers started building \$12,000-a-square-foot apartments, and they're not selling. It comes down to affordability. Somebody will pay \$100 million for an apartment, but how do you translate that into a herd? We're seeing significant changes in New York, including weakness in office construction.

**EF: What's your position in the office market?**

**SZ:** In 2007 we sold Equity Office Properties, the largest transaction that anybody had ever done. It was my baby and I created it, but I'm a hard-nosed realist. I accepted a godfather offer because as chairman of a public company, my responsibility is always to the shareholders. Since that time, we have bought and sold office buildings privately and took over a REIT with \$7 billion worth of office space. We've sold about \$3 billion of it in the last couple of years. I think the U.S. real estate market is benign, which means it's softening and it's hard to see it going up.

**EF: In desirable markets such as San Francisco and New York City, residential costs are astronomical and the disparity with other cities is dramatic. How do you create affordable housing in these areas?**

**SZ:** There is no way, other than in a command/control society, that you can create affordable housing. You can only create affordable housing by increasing supply and, therefore, by creating more opportunity

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and more options.

What you have in California and a number of other places are political decisions that increase zoning restrictions and sustainability requirements, which will soon eliminate all the people because nobody will be able to afford to live there. Compliance costs in the United States, locally and at the federal level, have probably doubled since 2008, while productivity has gone down. The more you create compliance costs, the less productive everybody is. This is a conundrum for the U.S.

We're a very unique country. As far as I know, there is no country in the world that has prospered as this one has. And I think it's very much correlated to freedom. Freedom is the ability to do things. It's not the ability to prevent other people from doing things.

**EF: What are the characteristics of successful leaders?**

**SZ:** They're realists. They demonstrate the shortest distance between two points is a straight line. They know where they want to go. They have to eliminate all the squiggles that special interest groups are pushing for and stick to the straight line. They've got to be able to say: Here's what we need, and here's how we're going to get it done.

The founding fathers created a republic, not a democracy. We are on the edge now of going from a republic to a democracy. I think we've over-played everybody's opinion on everything, and the result is you can't get anything done.

**EF: What are biggest influences in emerging markets in creating resilience? Who's doing it right or wrong?**

**SZ:** My organization has invested in real estate companies all over in emerging markets — China, India, Brazil, Argentina, Mexico, Chile, Columbia, among others. We discovered that those countries that were close to investment grade were the most disciplined. No government is more disciplined than when it's on the verge of investment grade because if it gets to investment grade, there's an absolute reward that you can measure the next day. Discipline and predictability are extraordinarily important. It takes bravery, guts and a lot of political capital to make things happen.

We first invested in Brazil right after President Lula da

Silva was elected. He had been a labor leader and was very, very popular. When he got elected, he was very disciplined. He was a social liberal and an economic conservative. He applied it exactly in that fashion and Brazil took off. By the end of first term, his economic strength wasn't quite what it was when he started, and his social orientation was warped. By the end of the second term, Brazil looked a lot like other countries in Latin America that were undisciplined.

Unfortunately, he was followed by Dilma Rousseff. She decided they were going to build everything in Brazil. An example was drill ships for the off-shore oil industry. Korea spent 80 years learning how to build those ships and, overnight, the contracts went to local companies. It was a disaster. This was repeated over and over again. The net effect was the country's growth rate was negative 4 percent last year.

There is no substitute for discipline. When we invest in these countries around the world, we keep looking for discipline. The key question is "Do they have leadership?"

**EF: Where is the world going? Are there any good places to invest?**

**SZ:** My answer is: Tell me where the demand is. There is nothing more critical. Can you identify a country of scale in the world that's growing at more than 3 percent? Aside from China, which reports numbers that aren't real, every other country is down. Mexico used to grow at 6 percent; it's now growing at 2.5 percent. The challenge and the question, as a worldwide investor, is: Where is the demand?

We have a world in which there is a dearth of demand. In the last year, with the dollar at close to an all-time high in strength, we see the Japanese yen devalued by 30 percent, the Euro devalued by 30 percent, the Russian ruble devalued by 50 percent, the Brazilian real devalued by 65 percent. We've gone from a world in which there was significant demand to one where there's a shortage of demand, and a lot of countries are playing the currency game in an attempt to overcome the tension. The 1930s told us that wasn't the policy that would lead to growth.

In the last 12 months, world trade is down in value 14 percent. Short of serious recessions, that's the first time since WWII that there's been a diminishment of world trade. We're a world of fiat currencies while the volatility of currencies and how they interface

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is critically important to how the world survives. The thesis that the U.S. can do well while the rest of the world suffers is unrealistic. We have an interconnected world and we can't lose sight of that.

**EF: To summarize, what do you see happening in U.S. real estate over the next number of years?**

**SZ:** The political environment in our country is divisive. We have an enormous lack of leadership. This impacts real estate. It's hard to be ebullient.

Growth, demographics and liquidity drive the real estate business. We've had pretty weak growth, our fertility rate is going down, and we've had enormous liquidity that has driven down cap rates.

Other than using other people's money — which is a factor today more than it ever was — what's the motivation to take the risk in a real estate market that is not strong? I think we're likely to see lower occupancy rates as supply increases. We had a two- to three-year period where we had virtually no increase in the supply of multi-family homes. Recently, we've had a significant increase. It's likely those extraordinary rents and increases in multi-family space are likely to be diminished.

On the office space side, I don't think there's a significant demand factor except in isolated cases such as a place like Silicon Valley but, overall, it's hard to identify where the demand is.

On the retail side, we're still dealing with the impact of on-line shopping and how much more

it's going to take out of retail brick-and-mortar sales. The big super malls are doing great, and the little neighborhood strip centers are doing fine, but everything else is getting hammered and is more likely to do worse tomorrow than it did yesterday.

There are other areas such as warehousing that are doing okay, but supply and demand tells us it's hard to make a case that we're going to see real estate values increase. With the cap rates at the lowest I've ever seen in my career, it seems to be there's more on the downside than the upside.

Ten years from now, I think we will see a significantly lower percentage of home ownership. Without exception since WWII, any time home ownership went above 64 percent, we've had significant oversupply and excessive encouragement to buy often, frankly, by people who couldn't afford it. That was before the demographic changes of the 21<sup>st</sup> century. If I were to predict where we'll be in 2025, I'd be comfortable suggesting home ownership would be in the 50s or below. You might ask: How do you have a society that doesn't have skin in the game? But few people realize the homeownership rate in Germany is only 40 percent. We are moving as a society from suburbanization to more urbanization. I see nothing on the horizon that is likely to change that. I think Gen Y will do almost anything they can to avoid leaving the urban core, including having fewer children. ■

# Awareness, Preparedness: Cities in the Era of Risks

BY THOMAS JUSTIN, CRE, FRICS

## Speakers:

**Heather Roiter Damiano**

*Director of Hazard Mitigation, NYC Emergency Management*

**Graeme Wood**

*Author, The Atlantic Magazine*

## Moderator:

**Thomas M. Justin, CRE, FRICS**

*Principal, The Weitzman Group, Inc.*

## INTRODUCTION

As part of the symposium titled Global Cities in an Era of Change, the Steering Committee felt strongly that this forum must address the many risks facing cities today, amongst them being natural disasters and terrorism. The objective was to understand how cities are identifying these risks and what plans are in place to mitigate them.

The panel was composed of two professionals whose area of expertise includes risk mitigation and terrorism. Heather Roiter Damiano is the Director of Hazard Mitigation for the City of New York. Graeme Wood is an author whose most recent credits include a March 2015 *Atlantic* cover story on ISIS titled, "What ISIS Really Wants" which detailed that group's apocalyptic ideology and origins as a radical splinter of Al Qaeda. In the first ten days after this article appeared, the story became the most read article in the magazine's history.

## PANEL DISCUSSION

Heather Roiter Damiano shed some light on vital issues given the current state of regional climate and international affairs. Damiano has nearly 10 years of experience with Emergency Management, in addition to her formal education in demography and urban planning.

Her expertise has given unique insight on how cities can more effectively plan for damages due to weather threats. NYC Emergency Management's mission is to educate the public and make people aware of different

## About the Author



Thomas M. Justin, CRE, FRICS, has been a principal of The Weitzman Group Inc. for over 30 years. His areas of expertise include real estate market analysis, development planning, investment analysis and real estate economics. He has advised on residential and commercial projects across the United States. In addition to his work in the United States, Mr. Justin has provided real estate advisory services on proposed real estate investments in China, Bulgaria, Poland, Kenya and Ghana.

Mr. Justin is a designated member of The Counselors of Real Estate and he is a former member of the organization's Board of Directors. He is a Fellow of the Royal Institution of Chartered Surveyors and holds the FRICS designation. Mr. Justin is the past chairman of RICS Americas, one of the five world regions comprising this global property organization that has approximately 100,000 members worldwide. He is a former member of the organization's international Governing Council, the body that sets the strategic direction for the organization.

Mr. Justin is an adjunct professor of real estate at the Schack Institute of Real Estate at New York University; he teaches a graduate course titled Real Estate Economics and Market Analysis and is the recipient of the University's Excellence In Teaching award.

hazards and the proper precautionary steps to take to minimize risk. NYC Emergency Management has more risk to deal with relative to other cities due to the unique composition of New York City. New York City has 520 miles of coastline, eight and a half million residents, as well as daily commuters. New York City estimates that 22 million people could be impacted by disasters that cause harm to the city. Coastal storms, an example of one such disaster, are some of the biggest threats to New York City. As a result, NYC Emergency Management has evacuation plans for over three million people in flood zones. Damiano noted that, while preparing evacuation plans, specific factors are taken into account, "How many people need shelter, how do you move people out of hospitals, [and] people who are home-bound in high-rise buildings."

## Awareness, Preparedness: Cities in the Era of Risks

Like most emergency operations, NYC Emergency Management is a 24/7 shop. They constantly monitor weather reports, airports and radios for any news that could affect the city. NYC Emergency Management's response plan consists of two main components: risk assessment and mitigation strategy. Risk assessment includes identifying what hazards pose a threat to New York City. NYC Emergency Management employs 240 people, and a small percentage strictly focus on gathering and analyzing data. Quantifying potential natural disasters allows them to understand what is needed for immediate response and recovery while keeping in mind the cost benefit of implementing projects; it must be feasible. The logistics group within NYC Emergency Management focuses on the question, "How do we know that we are going to get x-amount of things to x-place and what time?" NYC Emergency Management works closely with the Red Cross, Salvation Army and other human service agencies and providers to help facilitate delivery of necessary goods and services to affected areas. The question is how NYC Emergency Management can leverage those companies' roles to help people in an emergency. Furthermore, NYC Emergency Management also works with the private sector. During a natural disaster, it may be more efficient to use a private company's supplies and warehouses. Therefore, coordination and communication are essential to Damiano's line of work.

When natural disasters occur, real estate is the primary asset at risk. While different cities have different disasters to worry about, two things are equally important. First, when designing a building, it is important to think about how a disaster can affect the building. Would it be wise to place the most critical equipment in the basement when the property is in a flood zone? Additionally, are occupants prepared for when disaster strikes? Was there an evacuation plan that communicated important information efficiently to those inside the building? NYC Emergency Management helps real estate owners manage risk and limit loss. What's important is learning from previous disasters and implementing new plans to cover vulnerabilities. Concerns with utility and transportation disruption are highly prioritized. In addition, damage assessment and debris management are the responsibility of NYC Emergency Management.

Damiano says, unfortunately, "it takes something to happen to really have people invest in the risk and acknowledge that we need to do something about it." For example: preparing for the evacuation of transit hubs and skyscrapers. She also played a role in mitigating the damage from an explosion in East Village last March, as well as an explosion in East Harlem the year before. Hurricane Sandy, one of the most horrendous storms to hit the Northeast in the past century, destroyed most of lower Manhattan. Four hundred thousand homes were destroyed due to severe flooding. The one positive — the ability to learn from past events and better prepare for the future. Hopefully, NYC Emergency Management can learn from Hurricane Sandy, and prepare for other climate problems down the road, such as the expected 30 inches of sea level rise by 2050. After Sandy, Congress passed a 50 billion dollar appropriation towards risk management. Damiano described NYC Emergency Management as "the central nervous system for the city ... When something goes boom, we go up to our emergency operation center." Their main priority is making sure operations go back to normal as quickly as possible. For the immediate future, Damiano and NYC Emergency Management are placing large emphasis on protecting lower Manhattan due to its obvious vulnerabilities.

Graeme Wood, an experienced journalist who has recently focused on the Islamic State, provided insight into how we can prevent terrorism in cities. According to Wood, it is first important to understand the ideology behind terrorism. Traditional terrorism is depicted by the acts of Al-Qaeda, Boko Haram and other terrorist groups. It is essentially a small number of people, probably in the hundreds, conspiring against Western civilization. Therefore, historically, it has been relatively easy to fight traditional terror groups.

ISIS changed the approach from traditional terrorism to mass recruitment. ISIS has not been subtle. In its early stages, ISIS took to social media platforms, such as Twitter, to recruit new members; they have been successful. ISIS has established a list of priorities for its followers, most importantly, come to Syria and Iraq in order to build a society. Over 30,000 fighters have come from overseas to Syria and Iraq to develop an ISIS stronghold. In addition to those from overseas, there are tens of thousands of fighters native

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to the Middle East. This conflicts with the beliefs of Osama Bin Laden, who did not think building a society in the Middle East would be beneficial for his goals. The second priority that was listed by the ISIS spokesman, al-Adnani [Editor's Note: al-Adnani was killed on August 30, 2016], was to "attack on site and do it on your own." Some examples al-Adnani listed were to run someone over with your car, bash someone's head in with a rock or stab your neighbor. Hence, these have been classified as low-tech attacks. As a result, ISIS reportedly achieves 1.4 casualties per attack; whether or not they have been successful is subjective.

What is essential to these terrorist groups is the publicity. Wood noted that lesser known terrorist groups, such as Al-Shabaab and Boko Haram are looking for more publicity. Therefore, these lesser known groups now associate themselves with ISIS in order to make more news headlines. Wood said there is currently a "race to be the angriest, meanest most violent group on the block." This ideology is dangerous as it may cause further radicalization of terrorist groups.

According to Wood, the important question is: What is motivating people to join ISIS? Of course, there are a small number of people who are motivated religiously and believe that what ISIS is doing is in the name of God. A majority of people who are recruited by ISIS, however, are motivated by a sense of purpose. These people are simply unhappy with their lives and are looking for a fulfilling sentiment. When Wood interviewed an ISIS supporter, the supporter claimed that conforming to the cycle — work during the day, sleep and repeat — is not appealing, and the recruits want more satisfaction from life. ISIS convinced them that fighting for ISIS can give them this gratification. Lastly, the image of Muslims in Western society is not favorable to say the least. Muslims are constantly criticized and hostile environments can lead Muslims to resent Western civilization. Unfortunately, Wood believes the current solutions to these problems are slow, and could take generations to be effective.

Fortunately, not all ISIS supporters believe in a violent approach. Wood was able to identify ISIS supporters through social media. These supporters believe that, "if an infidel comes to you and he asks about the religion, you must answer his questions. You must answer them and afterward convey him to a place of

safety." This is a tradition of the prophet Mohammed. The responses were slightly skewed because Wood was unable to interview any violent supporters.

Wood addressed the pro-ISIS propaganda being spread on University campuses. Sympathetically, Wood believes that protecting Muslims' freedom of speech is vital to helping Muslims feel accepted into American society. Allowing them to speak freely in America is what separates the United States from other countries, and Wood believes this freedom will help reduce terror attacks nationally.

One of the more complex issues to deal with is that there is no geographic proximity in which ISIS discussions take place; most of it happens online. According to Wood, America may be less susceptible to terror attacks due to the Muslims' successful integration into society. For example, New York City has a large Muslim population, but has produced very few ISIS supporters. On the other hand, Minneapolis has produced several terrorist supporters. Interestingly enough, Muslims are better integrated into society in New York, while they may feel isolated in cities such as Minneapolis. Looking at Europe, there is a lack of identity felt by Muslims, and perhaps, that could be a reason as to why there are significantly more terror attacks in Europe than in the United States.

Another issue Wood addressed was the reintegration of ex-ISIS supporters into society. It is important to allow them to come back, share their stories, the fear within them, to people who are on the verge of joining ISIS. This could be beneficial by instilling fear into potential ISIS fighters. It is obviously important to first separate those who may be dangerous from those who can be used to prevent others from going. Wood briefly addressed the issue of Sunni versus Shia. ISIS is a radical Sunni group, and holds the belief that the Shia are apostates. Originally, ISIS killed Shias, but after influence from Bin Laden and Saudi Arabia, they diverted their efforts elsewhere.

According to Wood, "We have to look at and find out why one community seems to feel isolated, seems to feel that its only identity is its own, and other communities feel well integrated. That's what we're looking at going forward, and that's also why the United States in particular should probably be quite a bit safer than Europe."

## Awareness, Preparedness: Cities in the Era of Risks

Our cities are at risk from both natural and man-made threats. It is our job as citizens to help lessen the effects of these threats by preparing for, and thus minimizing damage from, the events we can't control, and attempting to prevent the acts from coming to fruition in the cases of those we can. Damiano believes it is not only important to have a well-thought out plan, but it is also imperative to practice that plan in order to anticipate problems before an emergency occurs. Wood feels, in the cases of man-

made threats and terrorist attacks, that, instead of simply attempting to make cities more difficult to destroy, we go straight to the source. We need to show immigrants they can flourish and be successful and integrated members of the community, while still retaining their ethnic identity. They won't need to go elsewhere for acceptance and will have a stake in where they reside. Investing the time to protect your community, your city, both personally and practically, is the key. ■

# Reinvention Of Cities

BY ED FRIEDRICH

**Speakers:**

**Andy Cohen**

Co-CEO, Gensler

**Colin Shepherd**

CEO, Investment Management, Hines

**Lisa Wise**

President, Lisa Wise Consulting, Inc.

**Moderator:**

**Ed Friedrichs**

Friedrichs Group

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**NEW TYPES OF CITIES ARE LEVERAGING CUTTING-edge technologies, infrastructure, design and planning techniques. The following is a summary of discussions between the panel participants, followed by some key points from each of them.**

Cities are being reinvented for the future out of necessity. By mid-century, there will be 32 percent more people living on the planet. From today to 2050, the world population will grow by 2 billion people, with 100 million more people residing in the U.S. With so many more humans consuming resources and needing housing and services in order to live, work and play in harmony, the challenges for planners, designers, developers and civic leaders are mounting.

Along with population growth other drivers of change include demographics, urbanization, technology advances and globalization.

**DEMOGRAPHICS:**

**Generational shifts are impacting the shape of cities. Millennials are driving this change, as younger generations seek walkable urban districts with access to mass transit and compact spaces.**

## About the Author



**Ed Friedrichs** completed his undergraduate degree in pre-architecture at Stanford University in 1965 and received his Master of Architecture degree from the University of Pennsylvania in 1968. He joined Gensler (now the largest and most respected architecture, design and planning firm in the world) in San Francisco in 1969, opening the firm's Los Angeles office in 1976. In 1995, he was appointed President and, in 2000, Chief Executive Officer of the firm, leading its development as one of the most successful and influential design firms in the world.

Since moving to Reno in late 2014, he is working as a development partner on the West 2nd District, led by the Don J Clark Group.

He is a co-chair of the Reno Streetcar Coalition, which is providing leadership to construct a streetcar line connecting the University of Nevada Reno with downtown, mid-town and the convention center along Virginia Street.

- By 2020, 50 percent of the workforce will be Millennials; by 2030, this will grow to 75 percent. They desire to live, work and play in ways different than their parents and grandparents.
- A Fannie Mae report debunks the notion that boomers are driving demand for rental apartments. Instead, that change is being driven by Millennials. It appears boomers are aging in place.
- A National Association of Realtors® survey found Millennials want more compact urban spaces and don't want to drive as much. They desire more transit and amenities, and they are willing to sacrifice certain things to have that lifestyle. They want to live in walkable communities.
- Households with children are shrinking and will decrease to about 25 percent of total households by mid-century.

## Reinvention Of Cities

- For the first time in history, the industry is concurrently designing and developing for four generations of inhabitants, and each one of them has their own views of how they want to live and work.

### **URBANIZATION:**

**As more of the world's population migrates to cities, densification brings its own set of challenges — from regulatory reform to the built environment's impact on climate change.**

- Over the next 15 years, 400 million people will move to cities. Today there are 3.9 billion people living in cities around the world; by 2050, that number will be 6.3 billion.
- Regulatory reform is required to accommodate and encourage densification and create places people want to live.
- Wise jurisdictions are updating plans, policies and regulations and creating new regulatory frameworks that promote dense, walkable spaces. They are becoming flexible in development of new codes in order to react to the market. Jurisdictions that don't change will be left behind.
- Densification of cities requires a focus on resiliency and sustainability. Buildings give off the most CO<sub>2</sub> into the atmosphere. Climate change and its implications are having a profound effect on how cities are being designed and built.

### **TECHNOLOGY ADVANCES:**

**Technological advances — from 3-D printing to cloud based computing — are changing the way cities and structures are being designed, built and used.**

- Architects and designers are now designing buildings and models with 3-D printing. A house model can be put together in two weeks utilizing 3-D printing, which has implications for creating affordable housing quickly and economically.
- In a world where an iPhone carries as much computing power as it took NASA to get a man on the moon, technology-based innovations are changing the way cities and structures are being designed for efficiency, sustainability and resiliency.

### **GLOBALIZATION:**

**Globalization has had a major impact on the growth of cities. As globalization promotes economic growth, the driving force behind urbanization, it is increasingly seen as a long-term strategic investment.**

- Since 1990, there has been a more than 400 percent increase in global trade.
- Despite the fact that emerging economies have been under stress, 60 percent of the U.S. GDP is attributed to globalization.
- The West Coast, especially, has seen tremendous investment from Chinese and other Asian investors. Massive amounts of sovereign wealth are coming into the country.
- From an investment perspective, globalization is not a short-term tactical strategy. It is a long-term strategic investment.
- In investing globally, the investor must consider a given level of expected return and be willing to sustain short-term volatility.
- From a global perspective, winning urban centers and sub-markets are places where people want to live — where economic, environmental, educational and quality-of-life services are favorable. Locations with desirable assets demand a premium.

The panelists believe there is a boom to come for development in the U.S., with most of the growth concentrated in the West and the South. From a baseline in 2000 of 230 billion square feet of development, it's expected that over a 30-year period, the country will need 100 billion square feet of new development and 100 billion square feet of redevelopment. That's an enormous amount of investment, and a monumental opportunity to change the paradigm of how the building industry does business and reinvents urban centers.

Regulatory reform needs to be part of this change, contends Lisa Wise. Form-Based Codes allow cities and developers to agree on a vision and plan that provides greater certainty for them, as well as for residents. If regulations are set early on, development is streamlined and greater collaboration allows a

## Reinvention Of Cities

more efficient process by which things get done, resulting in major shifts in urban environments.

Doing Form-Based Zoning in communities tends to generate a more vibrant streetscape. Wise cites examples in Redwood City and Richmond, California, as well as Denver, Cincinnati, Miami and Austin, as successful Form-Based Code efforts that have surmounted earlier development challenges.

In describing cities as economic engines of the future, Andy Cohen cites several examples of Gensler-designed buildings and spaces that have transformed the urban environment, enhancing how people live, work and play.

The Tower at PNC Plaza, a recently-completed building in Pittsburgh, is the most sustainable tall building in the U.S. The skyscraper has vertical neighborhoods, meeting rooms and collaboration spaces throughout. The building actually breathes, allowing natural air flow. Natural light penetrates as deep into the tower as possible, and a solar chimney draws hot air up through the building. A double wall allows insulation, mechanical louvers keep warmth in during cold weather and allow natural air into the building during the warm months.

In Kuwait, Gensler created The Avenues, a 10 million square foot horizontal city where everything is under one roof. More than 40 million people visit the building annually to stroll, shop, dine and live. The entire country sees The Avenues as one of the Middle East's premier retail and leisure destinations and an essential part of the urban fabric.

In south downtown Los Angeles, Gensler created a new entertainment district, with 15 million square feet of future development planned around the new core that will have 25,000 new housing units. Within the district, existing buildings were renovated for new uses. An old battery plant, for example, was converted to a model workplace of the future. And because people are no longer tethered to their desks, what was the loading dock for an industrial use became meeting spaces and areas for collaboration. Such spaces are spotted throughout the building.

In Shanghai, Gensler created the Shanghai Tower, the tallest building in Asia and the second tallest building in the world. At 140 stories tall, it is a vertical city with residential, office, hotel, retail and other features, including 14 different atriums that are the vertical city's town centers. Most significantly, the building is resilient and sustainable. An intelligent skin monitors the amount of light and air that's entering the building. Wind turbines at the top of the building produce renewable energy. Innovations from lighting to landscaping make it an example of the building of the future and a symbol for the world that China embraces sustainability.

From an investment standpoint, Colin Shepherd puts forth three simple principles for strategic long-term investment on such projects and in markets around the world: (1) capital preservation, (2) reliable cash flow and (3) asset performance.

He challenges investors to look at the preservation of capital in the context of a real-term basis: Will the growth of the investment outpace inflation?

He encourages investors not to underestimate loss due to turnover — either capital loss or downtime and leasing costs. He cites retail and multi-family investments as having a much lower loss factor as compared to office or hotel investments.

As part of asset performance, he cited location as an important element, giving as examples residential property that is adjacent to desirable amenities such as good parks, rivers and transportation. Such properties demand and receive much higher rents.

As cities of the future are renovated and reinvented, it is imperative that investors, designers and developers take seriously their obligation to do be part of the solution for the homeless who proliferate in dense, urban settings. Not only are the homeless and blighted areas of a city part of the analytics that go into a potential investment, it is incumbent on the real estate industry and municipal officials to work together to create cityscapes that are safe, accessible, affordable and pleasant for all residents. ■

# Symposium Wrap Up

BY WILLIAM L. RAMSEYER, CRE

**Speakers:**

**John Barton**

*Director, Stanford Architectural Design Program*

**James Curtis III, CRE**

*Managing Partner, Bristol Group, Inc.*

**Bowen 'Buzz' McCoy, CRE**

*Member, Stanford Real Estate Hall of Fame*

**Moderator:**

**William L. Ramseyer, CRE**

*Consultant, Guest Lecturer*

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ALL OF US WHO HAVE BEEN IN THE REAL ESTATE investment and counseling business over the years have attended many conferences allowing us to hone our skills and mix with peers in the business. These conferences tend to have a common thread throughout all of their agendas — discussing cap rates and spreads, expected IRRs and risk, identifying market trends/opportunities and so on. The gathering at Stanford was different and unique. We spent the entire two days talking about relatively new concepts for the real estate industry and society at large — innovation and the disruption that results from it will arguably be the largest influences on the real estate industry since the suburbanization of America in the 1950s. Although disruption has been with us in several property sectors, particularly hospitality, retail and logistics, the pace of disruption has massively accelerated over the past decade.

About 150 senior executives of leading real estate services and development companies from around the world, most of whom are active in the SPIRE (Stanford Professionals in Real Estate), CRE (The Counselors of Real Estate) and RICS organizations had the privilege of taking an informed peek into the future of how we're all projected to live, work and play. This peek was the courtesy of an incredibly talented and broadly experienced panel.

Before delving into a summary of the program we should all thank Stanford for hosting the program in

## About the Author



William L. Ramseyer, CRE, recently retired after a long and successful career in the institutional real estate consulting and investment management businesses. He currently serves as consultant to several real estate companies seeking to initiate or expand their investment management activities.

Prior to his retirement, Mr. Ramseyer was Managing Director of Cornerstone Real Estate Advisers' Business Development Group, expanding the firm's assets under management from under \$4 billion to more than \$9 billion during his tenure. While with Cornerstone, Mr. Ramseyer's principal focus was developing investment strategy for the firm's clients, raising capital and servicing its growing client base. Prior to Cornerstone, Mr. Ramseyer was Managing Director at Heitman Capital Management and Pension Realty Advisors which he co-founded in 1980.

Mr. Ramseyer has been prominent in industry associations, having served as chairman of both the Pension Real Estate Association and The Counselors of Real Estate organizations. Currently Mr. Ramseyer serves as the Chairman of NCREIF's Ambassador Group.

Mr. Ramseyer is a graduate of the University of Puget Sound and the Advanced Management Program at the Harvard Business School. Mr. Ramseyer also served as a Legislative Assistant to Senator Henry M. Jackson and served as an officer in the U.S. Navy.

such a stimulating environment. The intellectual value of the program and the qualifications of the presenters were truly impressive. An astonishing pace of change is clearly ahead for all of us. A startling example: an executive from one of the world's largest and most successful development organizations posited during the conference that one of the surest outcomes of developing a technologically advanced office building is that the building will be already behind the curve when it is finally completed and occupied.

Throughout the two-day session we were exposed to the concept of disruption and how its increasing rate of incidence is changing the way we travel, the way we work and the likely way we'll design urban centers in the next decade. The basis of this disruption, of course, is rooted in the Millennial generation

## Symposium Wrap Up

and within the knowledge and innovation centers throughout the world, particularly here in the United States. How appropriate that we held this program on the exhilarating campus of Stanford University, ground zero of Silicon Valley and all of the innovation for which it is responsible.

One of the challenges for those participating in the conference was to select through the many informative and valuable agenda topics for takeaway value in terms of how better, and from a more informed basis, we can conduct our respective businesses and investment strategies going forward. There are a couple of ways of approaching the daunting task of ferreting out the true value resulting from attending and participating in such a thought provoking conference. First is to put the conference output in the context of what we already know about demographic changes that are baked into our actions, and the second is to identify the highlights of the program as presented by individual speakers.

Let's talk first about what is already baked into demographic trends influencing the types, uses and locations of properties being developed in the current market cycle. For years, employment locations were dictated by employers — if one wanted a career in the automotive business, Detroit was the place an employee would have to move; for banking it was New York City or San Francisco. Today it is the employee who is increasingly influencing employment location. Advances in innovation and ability to work remotely have upended the location equation for development. Traditional single use properties in amenity-starved suburban locations are giving way to mixed-use, principally urban, consumer preferences.

The live, work, play proximity concept is alive and well in our real estate world. This point was poignantly highlighted by Buzz McCoy, CRE, in our closing session when he shared the joy he experiences when walking through his nearby commercial village. Knowing and sharing stories and common experiences with the owners of local restaurants, local pharmacists and local barbers are important to the well being of a local community. Connecting with the people and families that constitute a community are essential to the well being of neighborhoods. The importance that employers place upon the need to satisfy employee wants was very much in evidence to attendees who accepted the generous invitations from

Google, Adobe and LinkedIn to visit their offices near Stanford. Office location, spatial layout, employee services and flexible hours are indeed impressive and surely result in extraordinary productivity. At the same time, these employers and others have recognized the constraints of transportation and housing costs by providing coach service which is much appreciated and used by employees. Focusing on sustainability and environmental sensitivities are paramount at these companies and other organizations in the broad fields of information technology and innovation.

Many of the most fascinating presentations focused on the field of travel and transportation, centering on the business models and innovations of Airbnb, Uber and autonomous car companies. All we needed were contributions of behavioral economists to complete the agenda as to how transportation alternatives are going to affect our lives going forward. Condominium developments without parking requirements, office buildings without tenant parking, not owning a car, enhancing and renting out your home garage, car manufacturers making a wide range of their cars available to consumers on call—they're all in the cards in the near term. Each one of these conditions has impact on property development design and execution.

All of the disruption and innovation presented will no doubt have impact on the human condition, especially those factors affecting quality of life and economic activity. Some of the participants offered that we must take a hard look at education policy with more focus on how to learn rather than what to learn ... perhaps the return of the importance of a liberal arts education. Indeed, education is of principal concern when young families choose their residential locations. Schools remain a deterrent to families locating in urban settings. The existence and magnitude of charter schools in our communities will likely remain a major public policy topic going forward.

Many of us in the real estate business focus on the Millennial segment of our population when deciding where to invest or develop. During the course of the conference there was much attention given to this topic. The debate turned on where this segment of our population prefers to live ... some indicating they believe this generation seeks to live in the suburbs

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with good schools and comfortable houses, properly clustered in a mixed use setting, while others contend they will follow the prior generation and seek to live in more urban settings.

Development and investment strategists are increasingly focusing on this apparent dichotomy. That said, some analysts downplay the importance of Millennials as there are indications they are more interested in experiences than things and thereby not particularly big consumers.

Another interesting observation of many of the speakers and those on the closing panel is the changing roles of government in areas which influence real estate decision making. There appears to be a trend to more local governmental influence and less at the federal level, a trend generally supported by industry participants. Growing governmental regulation is very much present in the two industries highlighted during the conference: hospitality (Airbnb) and transportation (Uber). Both organizations, and indeed their peers in the hospitality and transportation sectors, are increasingly relying upon the policies of state and local agencies.

Overall, the conference allowed attendees to better understand all of the elements of successful disruptive innovation. Never before has it been so important for all of us to surround ourselves with a wide range of intellectual input. Prudent real estate decisions are increasingly challenging at best, and potentially near impossible at worst. We all need to think about the potential disruptions in our businesses, engage in innovation and be ready to do it all over again.

I've long been an advocate of rotational investment strategy in real estate, rotating property types and locations over the long term for optimum portfolio performance. Professional investors are constantly balancing in favor/out of favor sectors that influence capital flows/cap rates while also trying to best identify strategies that will result in growing cash flows. Now there is a new dimension—trying best to anticipate likely innovations affecting real estate and take advantage of the resulting disruption. Our speakers did an excellent job of setting the table for us—now we must think through the implications of what we learned. That's real take away value. ■

# Connected Citizens Enable 21<sup>st</sup> Century Urban Systems: Cities Powered by Rich Data and Smarter People

BY GORDON FELLER

WITH THE ARRIVAL OF NEW AND POWERFUL technologies and the declining costs of these technologies, some new possibilities are emerging for cities and their transport systems. For example, the Internet of Everything (IoE)<sup>1</sup> can benefit cities by connecting people, processes, data and things as **everything** comes online. This is creating unprecedented opportunities for organizations, individuals, communities and countries to realize dramatically greater value from networked connections—including economic growth and improvements to environmental sustainability, public safety, the delivery of public services and productivity. The potential here is for cities to become truly transformed.

There is much debate about the potential value of the Internet of Everything. But what is it really? IoE is the intelligent connectivity of smart devices, and is expected to drive massive gains in efficiency, sustainable growth and quality of life. In other words, when objects can sense each other and communicate, it changes how and where and who makes decisions about our physical world. This is especially meaningful for private enterprises and public institutions, that can find more operating efficiencies, deliver greater value to customers, employees and citizens in general, and enable new business models. IoE has its roots in industrial automation, noticeable recently in the convergence of operational technology (OT) and information technology (IT).

With the explosion of devices and new applications, there is a drive to leverage the reach and power of the internet to enable new intelligent interactions between those things. The Internet of Things (IoT), an extension of the internet where everyday objects have network connectivity, is increasing the connectedness of people and things on a scale that once seemed unimaginable. In fact, devices already outnumber the number of human beings on the planet by a scale of 1.5 to 1. In response, organizations across all industries and vertical markets need to create an expanded, adaptable network infrastructure that can

## About the Author



Gordon Feller is the Co-Founder of *Meeting of the Minds*, a global thought leadership network and knowledge-sharing platform focused on the future of sustainable cities, innovation and technology.

He serves as a consultant to Cisco focused on Internet of Things and Talent. Gordon has worked in the area of emerging technology for three decades, most recently consulting on projects which harness the power of data (whether in the cloud, pulled via mobile networks from IoT-enabled end-points, or other advanced technologies) for solving complex problems. From 2010-2016, Feller was the Director of Urban Innovation at Cisco Systems headquarters in Silicon Valley where he served in an executive capacity within the company's programs focused on cities. Prior to joining Cisco, Feller was the CEO of *Urban Age Institute*, an international non-profit research and training organization which began inside the World Bank and spun off in 2001. For 30 years, Gordon has advised on economic and technology issues with leaders of multinational companies, cities, NGOs, foundations, and national governments. His clients have included The World Bank, UN, German and Canadian national governments, The Rockefeller Foundation, IBM, Reuters, Metropolis, United Cities & Local Governments, among others. Gordon advises leaders on harnessing the power of advanced technologies which can enable them to solve complex problems with a special focus on practical solutions where economics, technology, and sustainability intersect. You can contact Gordon at [gordon@cityminded.org](mailto:gordon@cityminded.org).

grow along with evolving connectivity demands from inside and outside their organizations. At the same time, they need to ensure that the vulnerabilities inherent in this more complex, interconnected infrastructure are secured. Several factors are reshaping the IoT market:

- The explosion of data and data analytics enabled by cloud computing.
- The growing interconnectivity across industrial/operational devices and growth in the number of smart mobile devices.
- The convergence of networks both industrial and enterprise that are enabling applications such as video surveillance, smart meters, asset/package tracking, fleet management, digital health monitors and a host of other next-generation connected services.

## Connected Citizens Enable 21<sup>st</sup> Century Urban Systems: Cities Powered by Rich Data and Smarter People

Connectivity means more data — gathered more frequently from more places, which in turn means more visibility and more ways to increase efficiency and productivity, while improving safety and security. Analyzing data provides an even more sophisticated way to redesign entire processes and create new opportunities.

Smarter decision-making separates control systems from machines: already smartphones can remotely manage a number of physical objects like security cameras, thermostats and lights.

Organizations of all kinds (for-profit; governmental; non-governmental) are facing increased pressures in nearly every industry to get their products and services to market more quickly, meet changing regulatory requirements, and at the same time innovate while obtaining greater operational efficiencies. Growth in the number and types of devices as the result of a mobile workforce, supply chain partners and the “consumerization” of business tools (anytime, anywhere, pay as you use technology enablement) are presenting network coverage and security challenges to nearly every organization.

To meet these challenges, businesses must become more agile and stay ahead of their competition and quickly respond to market and technology changes. An IoT platform (across the infrastructure and applications) can help businesses meet these challenges and make organizations more innovative, efficient and competitive.

However, the implementation of an IoT platform can bring challenges of its own. Disparate systems, machines and their proprietary protocols need to be managed, integrated and secured. Connecting sensors, objects, machines and devices with a simple, end-to-end infrastructure can be challenging without the right strategy and planning and the right business partners. In addition, networking machines that have never been connected will generate vast amounts of data that will only be useful if harnessed effectively with a reliable network that can scale massively, offer high resiliency, provide near real-time access as well as end-to-end security.

The opportunities can far outweigh the challenges if managed with the right partner. The connection of devices, machines and things will provide the opportunity to dynamically generate, analyze and

communicate intelligence for businesses to increase operational efficiencies and power new and greatly improved business models. With IoT, businesses will be able to find new ways to innovate and realize greater efficiencies with suppliers, distributors and channels throughout the business value chain.

IoE is a global phenomenon that is changing the way cities grow and thrive. IoE brings together people, processes, data and things to make networked connections more relevant and valuable than ever before. Today more than 99 percent of things in the world are not connected. But there is good news: it is estimated that by 2020, 4.5 billion new people and 37 billion new things will have connected to the internet.<sup>2</sup> In the near future, the growth and convergence of information, people and things on the internet will make networked connections more relevant and valuable than ever before, creating unprecedented opportunities for countries, industries and individuals. The network plays a critical role in the IoE: it must provide an intelligent, manageable, secure infrastructure that can scale to support billions of context-aware devices.

How are cities capturing the value of IoE? With their access to cutting-edge technology and innovative solutions, cities are finding ways to leverage their technological power to transform the way they do business, the way citizens connect to services and to government agencies, the way that urban communities create lasting bonds between and amongst residents and visitors. The city's ability to build, manage and secure end-to-end IP-based platforms translates into the connections between things, people and information.

Today's urban leaders know that the future is coming fast, and it is just around the corner. They are asking: how can all this connectivity help me grow my business, deliver better services and experiences and open up new possibilities? They are no longer just looking for a technology provider. They are looking for a strategic partner who understands their needs and can help transform their business. They are looking for the intelligent connectivity that can help them to create sustainable value.

Numerous technologies make it possible to turn dumb and isolated buildings into hyper-connected buildings. Facilitating scaling and security without significantly increasing the data center's energy

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or physical footprint can be done by replacing bladeservers with sophisticated storage solutions and by using advanced energy management applications. Time-tested solutions are now solving these problems. How can a high-speed broadband network make a positive impact on economic development? Information and Communications Technology (ICT) is transforming how the world responds to economic growth and job creation challenges. Just as ICT transformed the publishing, education, healthcare, retail, manufacturing and financial services industries, so too is it already altering the economic development landscape — helping address the issues that are front and center for every town, city, state and nation.

How can the network aid an economic turnaround? Organizations all over the world are dramatically increasing the positive impact of new technologies by changing the way we all do business — shifting operations and altering organizational behavior. The network has now become a key technology enabler for those seeking to change how the economy works, how government delivers services and how our schools train the next generation of innovators, inventors and workers.

The network is being used for much more than merely reducing costs. Connecting home and/or office electronic devices to the network provides office managers and consumers with the ability to monitor, manage and reduce energy use by creating the visibility that is essential to understanding how and where, in real time, electricity is being consumed. In addition, cities are reducing wasteful waiting times and non-productive commuting times by bringing information to users instead of bringing users to the sources of information.

Consider the transport challenges facing most cities: traffic congestion is often not really a capacity problem but a load management problem, much like the internet. The movement of people and traffic in cities can be as efficient as the movement of traffic on the internet. Whether in energy, or transport/traffic, or buildings, the same rule applies: technology advances have made it possible for complex systems to be managed- and self-managed in radically different ways. The network can be an important tool for addressing the impact of urban areas on the environment. High connectivity is proving to be the key.

The network has changed the patterns and the means by which the economy functions. And it will change the ways we work at our jobs. The future of work is far more than connected buildings and connected workplaces. Hyper-connected buildings use an IP network to converge all of the systems and all of information, communications and building technologies. Hyper-connected workplaces bring productivity down to each square foot; consolidating office space requirements saves energy, effort and other resources.

Every organization that owns, operates, or uses real estate, is facing harsh realities; In most cases, these buildings are the second-largest expense for many organizations. For commercial real estate developers and owners, real estate is their core business and it is through innovative leasing and solutions that they differentiate themselves from the competition. In North America alone, new real estate worth more than \$600 billion is built each year, at least during ‘normal’ economic times and owners and developers spend approximately the same amount for retrofits and renovations. This is in addition to the more than 100 billion square feet of space already in the market, of which more than 60 percent is 30 years of age or older.

One not-so-well-known fact is worth recalling here: the massive quantity of existing real estate and the large production of new buildings contribute to nearly 50 percent of the EU’s carbon emissions, making real estate the single largest contributor to that continent’s environmental paradigm. Consequently, the network is having a significant impact on all aspects of designing, building, using, owning and operating real estate and the spaces in which we live, work, play and learn. At the same time, if buildings are designed with hyper-connectivity in mind, the building owner pays less for cabling infrastructure, cable trays and even the cubic content of riser management (the room-size risers in high-rises that accommodate the cabling infrastructure for IT and building systems). Collapsing disparate and multiple cabling infrastructures can result in 20-30 percent less cabling in each building: the average cabling per workstation in an office environment is more than 1,500 feet.

Environmental stewardship starts with knowing how much energy is being consumed, why and

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where. In today's situation, it is rare for an operator or owner of real estate to know how much energy is being consumed at any given time. The most granular one gets is the summary in the utility bill at the end of the month. The network integrates energy management systems to provide the ability to abstract the appropriate information from energy systems and produce real-time reporting capabilities of actual energy consumption. This allows building managers to monitor and measure energy consumption at great granularity; providing the ability to specifically respond to energy consumption patterns (unplugging devices if they consume but are not used or turning off lights in spaces at times when they're not used). The building owner can now automate "cause-effect" relationships between the building systems and the energy management. In office environments, approximately 40-50 percent of the space is usually underutilized. It costs the organization rent, heating, cooling, operational fees, etc. to provide for this space. However, the network has been the breeding ground for innovative technologies that can help significantly optimize space utilization.

The hyper-connected workplace is a flexible work environment, enabled through use of technology, which converges all IP communications, wireless networks and VPNs. Employees work at a variety of desks, conference rooms, outdoors, homes and remote locations equipped with networking capability-enabling anytime/anywhere productivity. Hyper-connected buildings use an IP network to converge information, communications and building technologies. This results in more sustainable benefits, with centralized operations, management and efficiencies. Connected workplaces take sustainability down to each square foot; consolidating office space requirements saves energy, effort and other resources.

Hyper-connected workspaces are producing these kinds of measurable results:

- 40 percent increase in office space utilization
- 40 percent reduction in electrical demand
- 54 percent reduction in IT cabling
- significant reductions in construction materials and land, due to fewer sites being needed
- increased telecommuting and reduced traffic congestion

- reduced carbon footprint of employees
- reduced travel due to web 2.0 collaboration
- reduced real estate demand
- reduced infrastructure, cabling and furniture reduced by 50 percent
- reduced industrial waste
- reduced office equipment (from 3.5 to 2.8 devices per worker)
- reduced energy consumption
- reduced watts/sq. ft. 2.6 to 1.7
- reduced watts/employee from 424 to 179
- eliminated desktop computers, personal appliances, etc.
- reduced office waste streams
- reduced paper and cardboard by 60 percent

Smart urban development starts with a solid foundation. What some now call 'the fourth utility' is really the next generation information network. In addition to the plumbing, piping and wiring in a building, the smartest developers and building managers now add an IP network to the fabric of their property. Not much unlike the other utilities, they lay the groundwork to design and install systems that interact with and communicate over this one network. A secure, flexible and scalable network reduces Capital Expenditure by tying together all of the disparate networks for the communications, security and building automation systems. With such strategic impacts on organizational transformation, the network should be considered much earlier in the building life cycle than it normally would be. More than 75 percent of the lifecycle cost is incurred in the operation stages. The ability to impact cost during the operation stages is much earlier in the lifecycle process. Historically, building and work place design do not include IT considerations and IT design is not dealt with until after delivery of the property. This, then, is too late to have the opportune impact. Combined, however, real estate and IT provide such impact on the way the facility serves the company, the planning and design of the IT and building systems convergence needs to be considered when the ability to impact on the cost and functional design is greatest and where cost of changing the building design is lowest. Further in the lifecycle,

## Connected Citizens Enable 21<sup>st</sup> Century Urban Systems: Cities Powered by Rich Data and Smarter People

it will be not only more expensive to implement the changes, but the impact hyper-connected buildings has on real estate functionality and operations could be lost.

This lifecycle and the notion of entering integrated building, workplace and IT design in the strategy stages works for any new developments. Every owner goes through the same cycle for each and every renovation and major renovation activities. Although the ultimate financial impact might be different, it is never too late to consider connectivity, as the investment, will pay for itself due to reduced cost in operations and increased productivity and revenue.

The next generation of real estate and building services will turn workplaces and home spaces into environments that are personalized, efficient, functional and profitable. A smart and connected real estate solution facilitates the following:

- Enhances the end user experience
- Reduces total cost of ownership
- Provides environmentally sustainable properties

Technology affects every aspect of the way people live, learn, play and work. However, today's building environments are largely obsolete and have not evolved to support these changing lifestyles. In addition, key trends are driving the need for building transformation — trends such as globalization of the workforce, the drive for environmental and social responsibility and a growing, worldwide population. As user requirements evolve, buildings must adapt and change. Real estate professionals must take steps to transform the physical spaces of the future through technology innovation, delivering value-added, revenue generating services while streamlining the processes that create buildings and developments.

The network becomes an intelligent building infrastructure and the foundation for change in any development project — adding value to education, financial services, healthcare, commercial real estate, hospitality and corporate real estate projects. Intelligent building infrastructures create an unprecedented opportunity for improved services, enhanced processes and cost-effective operations for everyone who uses or creates buildings, worldwide. ■

### ENDNOTES

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2. See [http://cdn.iotwf.com/resources/71/IoT\\_Reference\\_Model\\_White\\_Paper\\_June\\_4\\_2014.pdf](http://cdn.iotwf.com/resources/71/IoT_Reference_Model_White_Paper_June_4_2014.pdf)

# What Can Go Wrong?

BY HOWARD C. GELBTUCH, CRE, MAI, FRICS

MANY OF US MAKE OUR LIVING PREPARING forecasts of supply and demand, income and expenses, and the anticipated actions of buyers, sellers, lenders and government agencies. Some years ago, during a presentation of ten years of projected cash flows to a client, my colleague and mentor, announced "The only thing we know for certain about our forecast is that every number is wrong. Neither revenues nor expenses are going to change at exactly the projected rate over the next decade." After getting over my initial shock, I realized he was right.

So, while the Stanford symposium was enormously insightful, and certainly many of the topics discussed have already and will certainly continue to come to fruition (Airbnb and driverless cars are just two notable examples), what can possibly go wrong along the way?

## POLITICAL RISK IS AN OBSTACLE TO GLOBAL GROWTH

In Congo, the president recently announced plans to run for a new seven-year term despite it being against the constitution. The president of Côte d'Ivoire lost the election in 2010 but refused to leave office. Political risk was once confined to exotic emerging markets including military coups in Fiji in 2000; Thailand (2005 and 2014); and Mali (2012). Electoral fraud has been documented in Kenya (2007) Georgia (2008); Burundi (2010); and Ukraine (2012). More recently we witnessed an attempted military coup in Turkey; a debt default by Venezuela; and increased political sanctions in Russia. And even in the world's most established markets, investors are still trying to understand the implications of Brexit for the economies of the United Kingdom and European Union.

Should we conclude that Uber, the world's most valuable startup, with a valuation of about \$70 billion and a presence in more than 400 cities around the globe, was unprofitable in China — population 1.4 billion — including more than 150 cities with populations over one million, eventually selling its

## About the Author



Howard C. Gelbtuch, CRE, MAI, FRICS, principal, Greenwich Realty Advisors, Incorporated. Greenwich Realty Advisors is a small, New York-based internationally-oriented valuation and consulting firm. Howie has valued properties throughout the Americas, Europe, Russia, Asia, and Africa.

Prior to starting Greenwich 20 years ago, Howie Gelbtuch was Senior Director of Jones Lang Wootton (now Jones Lang LaSalle), supervising the firm's valuation activities in North and South America. Before that, he started and ran the real estate valuation practice at Coopers & Lybrand (now PricewaterhouseCoopers), and was Director of Research for Morgan Stanley Realty. He was also Senior Vice President of Landauer Associates, valuing large retail and office portfolios, and spent six years with Integrated Resources where he founded and supervised their real estate valuation department, acquiring about \$1 billion of real estate annually.

In 2002 and 2011, he authored the Real Estate Valuation in Global Markets textbooks, published by the Appraisal Institute, covering valuation techniques in nearly 50 countries.

Howie holds the CRE, MAI, and FRICS designations, and was the 2013 National Chairman of The Counselors of Real Estate.

operation there to local rival Didi, because it did not know how to manage its software business?<sup>1</sup> Or could it be that it did not fully take account of China's less tolerant political system; civil (based on rules) rather than common law (subject to judicial interpretation) legal system; and vexing regulations, to say nothing of a culture that stresses societal order over entrepreneurship?

When companies expand globally, they face unfamiliar cultural, political and economic environments that put additional, unforeseen pressures on their usual business models. They also face local competitors that understand the local environment far better than they do. Unless they are able to accurately assess and adapt to the culture of the city they are expanding into, they risk becoming the next Nokia or BlackBerry.

## What Can Go Wrong?

### CORRUPTION IS RAMPANT IN MANY CITIES THROUGHOUT THE WORLD

I used to be uncomfortable saying this, but it's simply become too common and too large of a problem to ignore. I've personally experienced having to pay for information that should have been available for free in Latin America, Asia and especially Africa where it's virtually an everyday occurrence to have your car stopped by soldiers with rifles manning roadblocks saying, "What do you have for me?" or "How can you appreciate me?",<sup>2</sup> to say nothing of being charged an extra fee at customs outposts. Learning how to deal with bribery when it's a fact of everyday life is another obstacle to the growth of cities.

If more residents paid taxes, some of this money might be directed to needed new roads and airports. But simply directing this money to government coffers is insufficient. A former national security adviser in Nigeria is alleged to have awarded \$2 billion in fake contracts. Nigeria's state-owned oil company reported that about \$1 billion per month disappeared during 2013. In Brazil, the figure in the Petrobras scheme is \$17 billion in asset and corruption charges, and in the Philippines the losses from 1MDB scheme are approaching \$4 billion.

In India, Kingfisher Airlines filed for "bankruptcy" but all of its books and records have mysteriously vanished. In Brazil, corruption is so rampant that *malufar* is a commonly-used verb meaning to divert government funds for personal use. In Lagos, private schools teach courses in credit card fraud. In Venezuela, both Proctor & Gamble and Clorox have had factories seized and employees arrested.

The enhanced ability to get clear title to real property would spur investment. Throughout African cities, numerous homes have hand-painted signs on their border walls proclaiming "This house is not for sale" to combat unscrupulous "sellers" of property that they don't own.

The same issue that recently forced the resignation of the CEO of Wells Fargo, opening up accounts for customers without their consent, is similar to the 2014 Prime Minister's People's Wealth Scheme in India, whereby hundreds of millions of bank accounts were opened by branch managers so that the government could boast it was bringing banking to the poor.

Unfortunately, as it turns out, most of these accounts

were seeded with only a single rupee, or less than two U.S. cents. Good relations with the government bureaucracy are a requirement for business success in corrupt markets.

Fortunately, many companies are now taking steps in the right direction. The crackdown against conspicuous consumption in China is widely perceived to have had a negative impact on the sale of luxury watches. In South Korea, screensavers on some company computers have regulatory pop-up quizzes that remain on the screen until the correct answer is proffered by the employee. And in some cities, corporate credit cards are now programmed to deny payment to questionable nightclubs and hotels.

### MANY GLOBAL CITIES ARE NOT AS ADVANCED AS THE UNITED STATES

One of the overriding themes of the Stanford Symposium was "smart cities." In many of the 35 OECD (Organisation for Economic Co-operation and Development) countries, credit bureaus enable prospective lenders to assess the risk of potential borrowers. But only about ten percent of Africa's 1.2 billion residents and South Asia's 1.7 billion population are covered by private credit rating bureaus. The result is that banks lend to government agencies instead of homeowners since it's easier than dealing with property title issues, while individual borrowers are charged interest rates of 20 percent or more. Clearly the inability to access credit is an obstacle to future growth. By way of an additional example, there are about 175 "unicorns" in the world (private tech companies valued at \$1 billion or more), yet only one is in Africa (Africa Internet Group).

In some cities, the lack of credible financial information has given rise to the growth of psychometrics, the science of measuring mental capacities and processes. By developing character quizzes, the U.S.-based Entrepreneurial Finance Lab ("EFL") has processed some 300,000 applications for credit from individuals.

In a similar vein, the lack of infrastructure in many emerging cities has been an obstacle to the growth of cities. Manhattan is about one-third roads while some parts of Africa are five percent roads. As a result, it's more expensive to ship goods 500 miles from Lagos to Kano than 7,000 miles to Beijing.

One possible outcome is that just as Africans have

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gone from “no phones to smart phones,” Africa may evolve from a dearth of highways and trucks to delivery by drones. Access to self-driving cars is among Africans’ least concerns.

### **CONCLUSION**

Despite these obstacles, many companies and institutions have been successful in building their brands globally. Reinforcing Stanford University as the ideal choice for the Global Cities in an Era of Change symposium, it is fitting that most of the world’s most valuable brands have come from companies in technology-related categories.

Brandz recently issued its annual ranking of the Top 100 Most Valuable Global Brands. In 2016 these were:

For clues as to which global cities are best poised for growth, it’s worth noting that 17 of the 20 companies on the Brandz<sup>3</sup> list are based in the United States

Table 1		
Rank	Brand	Category
1	Google	Technology
2	Apple	Technology
3	Microsoft	Technology
4	AT&T	Telecom Providers
5	Facebook	Technology
6	Visa	Payments
7	Amazon	Retail
8	Verizon	Telecom Providers
9	McDonald's	Fast Food
10	IBM	Technology
11	Tencent	Technology
12	Marlboro	Tobacco
13	Coca-Cola	Soft Drinks
14	Wells Fargo	Regional Banks
15	China Mobile	Telecom Providers
16	General Electric	Conglomerate
17	UPS	Logistics
18	Alibaba Group	Retail
19	Disney	Entertainment
20	MasterCard	Payments

Source: Brandz/Millward Brown

(although that’s not necessarily where they get most of their sales; Coca-Cola gets more than 80 percent of its volume overseas) with the remaining three (Tencent, China Mobile and Alibaba Group) headquartered in China.

Yes, many of the Stanford symposium forecasts will come true, and those of us who attended and our clients will be the wiser for it. But the road to change may be rockier and the destination different than anticipated.

Participants at the symposium were well-advised to absorb as much as possible, yet reach their own conclusions. As Henry Ford is reported to have said: “If I had listened to my customers, I would have given them a faster horse.” ■

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### **ENDNOTES**

1. Uber maintains it is a software company that connects drivers with customers.
2. *The Economist* reported that two American economists, Jeremy Foltz and Kweku Opoku-Agyemang, examined 2,100 long-haul truck journeys in Ghana and discovered that the average driver was stopped 16 times to extract money.
3. Source: BrandZ/Millward Brown

# Developing Parking Facilities in the Modern Day: Preparing for the Future

BY ROBERT S. GOLDSMITH, CRE, AND STEVEN G. MLENAK

TAKE A MOMENT TO THINK ABOUT THE WORLD IN 1987. Virtually every aspect of our daily life has changed in those three decades. At the time, mobile phones cost around \$1,400 and were the size of a Dutch oven. The words “climate change” meant nothing. The average monthly rent was \$395 and a dozen eggs could be yours for just \$0.65. And then there’s this humbling fact: the World Wide Web would not be invented for another two years.

Yet, for many individuals and businesses making the final payment on a 30-year mortgage or bond this year, 1987 was likely the year in which such debt was first secured, likely against a physical property, be it a home, office building or other facility, showing its wrinkles as compared to more modern, technically-up-to-date facilities. Developers and governing bodies throughout the country seeking to construct and/or finance certain facilities are now being forced to consider the shelf-life of such properties like never before.

For certain types of facilities, such as structured parking garages, many experts are predicting a rapidly diminishing overall demand in the decades to come. Those looking to finance the construction of such facilities would thus be best counseled to account for what many of these experts believe will be a seismic shift in the way people get around. Whether it be through conservative planning, by designing such facilities in a manner which allows for adaptive reuse, or by utilizing shorter term financing options, developers of structured parking facilities should be careful not to find themselves in a position where they are still making debt service payments on an empty, unused and, ultimately, non-adaptable facility.

For generations, the need for more and more parking has seemingly grown unabated. According to *The Economist*, parking accounts for as much as 24 percent of the area of American cities, and some

## About the Authors



**Robert S. Goldsmith, CRE**, is a partner at Greenbaum, Rowe, Smith & Davis LLP, located in Woodbridge, N.J., where he chairs the Redevelopment & Land Use Department. His practice focuses on redevelopment, downtown and urban revitalization, transit oriented development, project financing and incentives, sustainable building initiatives and public-private partnerships. Mr. Goldsmith's experience encompasses counseling clients on the specialized issues in redevelopment related to parking demand, design and construction.



**Steven G. Mlenak** is an associate at Greenbaum, Rowe, Smith & Davis LLP, located in Woodbridge, N.J., where he is a member of the Redevelopment & Land Use and Real Estate Departments. He concentrates a majority of his practice in the area of community association law, providing strategic guidance and general counseling to the firm's association clients across a broad range of legal issues. Mr. Mlenak also provides support and guidance to clients on a variety of land use matters, including site plan, subdivision and variance applications, and counsels both developers and municipalities on issues related to the redevelopment process.

urban areas have as many as 3.5 parking spaces per car.<sup>1</sup> Still, those looking for parking spaces account for as much as 30 percent of miles driven in urban business districts.<sup>2</sup> Experts now believe, however, that we may be at the apex of that growth curve. Due to technological advances such as the proliferation of automated driverless vehicles, the growth of companies offering “shared” vehicle services such as Zipcar and Uber, and overall shifts in the value society places on owning cars and suburban living, parking demand is now beginning to decrease in many areas of the country.

Car-share companies such as Zipcar, car2go, Uber and Lyft, claim that for every shared vehicle on the

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road, 15 personally-owned vehicles are taken off of it.<sup>3</sup> A report prepared by the University of Berkeley's Transportation Sustainability Research Center backs that claim up, finding that around 20 percent of corporate Zipcar members reported that they sold a personally-owned car after joining the program.<sup>4</sup> Additionally, another 20 percent claim they avoided buying a car as a result of joining the service.<sup>5</sup> Overall, the study concluded that cost-sharing is on the rise due to a younger generation less keen on vehicle ownership and a growth in the corporate sector looking to enjoy the cost savings over maintaining a fleet of vehicles.<sup>6</sup> In Paris alone, it has been estimated that more than 20,000 private cars have already been taken off the road.<sup>7</sup> When you consider that personally-owned cars are parked as much as 95 percent of the time,<sup>8</sup> it only makes sense that such services will grow as more and more people look to shed unnecessary car payments, repair and upkeep costs and insurance premiums.

Another major factor to consider is the expected implementation and growth of driverless, autonomous vehicles. Companies such as Google, Apple, Ford, Volvo, General Motors and Tesla have all been working on self-driving technology for years and, by all accounts, we are closer to a driverless world than ever before. According to the Boston Consulting Group, fully automated cars could make up nearly 10 percent of global vehicle sales a year by 2035.

The Government thinks the time for self-driving vehicles is coming as well. In February 2016, the U.S. Department of Transportation included \$4 billion in its proposed 2017 budget for the purpose of implementing driverless car pilot programs over the next decade.<sup>9</sup> Meanwhile, carmakers, technology companies and ride-sharing startups announced they were forming a coalition to lobby the federal government on the rules for self-driving cars.<sup>10</sup> The "Self-Driving Coalition for Safer Streets," composed thus far of Ford, Google, Uber, Lyft and Volvo, aims to advocate for the quick implementation of rules governing autonomous vehicles as the technology gets closer to being market-ready.<sup>11</sup> Part of their push is an argument that the proliferation of driverless vehicles which practice conservative driving techniques and obey all speed and traffic laws would greatly reduce the rising number of casualties caused each year with more and more drivers distracted by texting,

screaming kids in the backseat, applying makeup, etc. Driverless vehicles would also help reduce the number of intoxicated drivers on the road.

At first impression, it could appear that the advantage of such vehicles would be personal without an impact on overall vehicle ownership. But many experts believe such vehicles would cause a dramatic reduction in the number of cars needed in families. A driverless vehicle could drop Dad off at work in the morning, drive back to pick up Mom and drive her to work, pick up the kids after school and then pick both parents up at the end of the day. During its nonuse, the car could park further away without needing to use closer, for-fee, options. Finally, the driverless technology will make traffic flow more smoothly because of the elimination of erratic braking, the ability to re-route to avoid congestion, and the ability for vehicles to travel closer together to increase road capacity.<sup>12</sup> With cars in constant use, and the reduction of vehicles per family, much less parking space would be needed.

Aside from technology, society is slowly shifting its values away from vehicle ownership and suburban or rural lifestyles. In 1983, more than 91 percent of 20- to 24-year-olds held a driver's license. By 2014, that number had dropped to approximately 77 percent and shows little sign of recovering.<sup>13</sup> At the same time, cities are growing faster than the country as a whole. The Pew Research Center found that 48 percent of Americans would choose walkable urban areas instead of suburbs.<sup>14</sup> Notably, more people used public transportation in 2014 than in any year in six decades.<sup>15</sup> Still, some believe that the proliferation of driverless cars will mean many people moving further away from work since they are now able to be productive during their commute since they do not need to be behind the wheel.<sup>16</sup>

It is for these reasons that there have been calls on developers to strategically design new parking structures. *Washington Post* columnist Carlo Ratti believes that "designers, tasked with creating garages, should take as a challenge to introduce flexibility and acknowledge the full life cycle and potential transitions for these structures."<sup>17</sup> Architects and designers are more frequently being asked to design urban parking garages with the 'good bones' necessary to allow them to be re-purposed in the future to other uses. "As the auto culture wanes we're

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going to have a lot of demolition to do, which is unfortunate," according to Tom Fisher, dean of the College of Design at the University of Minnesota. "If we're going to build these [garages] let's design them in a way that they can have alternative uses in the future. With just a few tweaks that's really possible." The biggest design change that will yield the greatest flexibility, yet be the most costly, would be a do-away with sloped garages. Exterior spiral ramps or elevator lifts, for example, would surely enable developers to re-purpose the facility with the greatest flexibility in the future, however the cost in doing away with the tried-and-true sloped ramps which serve both as the means of traversing the different parking levels but also as additional surface area for parking will surely prove uneconomical for many projects.

There is no question amongst experts that the demand on parking is going to decline. What cannot be predicted is how slowly or rapidly that decline occurs. It is impossible to determine the parking demands of a society thirty years out. With conservative planning and prudent engineering, however, parking facility developers can avoid making the last debt service payment in 2045 on an empty parking facility. ■

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# Redefining Urban Mobility: Four Ways Shared Autonomous Vehicles Will Reshape Our Cities

BY ASHLEY Z. HAND, AIA, LEED AP BD+C

TRANSPORTATION TECHNOLOGY IS EVOLVING AT an exponential rate and, for the first time since the advent of the automobile itself, we have a unique opportunity to completely rethink our cities as they are shaped by transportation networks. With the advent of autonomous vehicle (AV) technologies, and the proliferation of shared mobility, there has never been a moment as critical as now to envision the city of the future.

With more than two-thirds of American adults having access to smartphones and the ubiquitous connectivity of Wi-Fi and broadband services, new transportation service delivery models and mobility marketplaces have emerged, challenging the status quo while offering new alternatives to consumers. Shared mobility — which enables users to gain short-term access to transportation modes as-needed — has introduced new transportation choices into the market. Transportation network companies such as Uber and Lyft are merely two of the many such platforms that challenge the status quo while services like carshare, bikeshare and scooter sharing are being introduced in market.

AVs have the potential to transform mobility in cities by providing new populations previously unable to drive themselves with access to vehicles; eliminating human error in traffic crashes; and creating more efficiency through connected vehicle and infrastructure technology. It is estimated that AVs will reduce crashes by 90 percent and save the United States economy \$190 billion annually.<sup>1</sup> This potential goes beyond just the vehicles and the services: this is a chance to rethink the public realm and strike a new balance between people and city. The advent of this broad mobility shift presents four major opportunities to redesign how our cities are developed and citizens move:

- 1. We can reclaim one of our largest public assets to create higher value, better quality streets designed to move people, not just vehicles.*

Since the advent of the automobile, urban streets have traditionally been designed to move as many vehicles

## About the Author



Ashley Z. Hand, AIA, LEED AP BD+C is co-founder of the smart city advisory company CityFi. Previously, Ashley served as the Transportation Technology Strategist for the City of Los Angeles Department of Transportation. As a fellow, she developed and is now implementing public policy, an action plan and pilot program recommendations for transportation happiness, shared mobility, automated vehicles and other technologies.

Prior to her role with the City of Los Angeles, Ashley served as the first Chief Innovation Officer for the City of Kansas City, Missouri where she created the nation's most comprehensive smart city to date through a public-private partnership that utilizes large companies and nimble start-ups to fulfill the city's goals, and initiated the development of a policy and operational framework to integrate technology into transportation, water, and energy management for the city among other civic innovation projects.

Ashley is a registered architect and green building professional and previously worked with AECOM on sustainability, planning, and design projects across North America. She serves on the Advisory Council for the Carnegie Mellon University Traffic21/T-SET University Transportation Center and Open Architecture Collaborative and is an adjunct professor at the University of Southern California Price School of Public Policy.

as efficiently as possible through and around our cities and measured by Level of Service (LOS). In Los Angeles, more than 15 percent of the total land is dedicated to streets — the largest road network in the United States — and most effectively supports the single occupancy vehicle. With a growing population, increased pressure on our environment, and the need to reduce congestion, it is becoming more important to design streets to accommodate other mode choices — whether active transportation (walking and biking), shared mobility or public transit. With recent efforts to address public safety and eliminate crashes, cities are rethinking the design of these roadways and are acknowledging through public policy, design guidelines and smart traffic management solutions that there is a need for greater balance in our public right-of-way. As a result, cities are adopting protected bike infrastructure, bus priority lanes, street trees,

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safer pedestrian intersections and other roadway design strategies to reshape how our city streets are used. These investments benefit not only the users of the infrastructure itself, but adjacent businesses, residents and neighborhood amenities. Studies show that more walkable neighborhoods are more desirable to consumers and increasingly consumers are choosing walkability and access to services over front lawns when deciding where to live.<sup>2</sup>

The calming of vehicular traffic and investing in infrastructure that supports public transit and active transportation are creating new economic opportunity and vitality on our city streets. In Salt Lake City, for instance, early research indicates that the rebalancing of the public streets in its main commercial corridor by eliminating parking and adding bike facilities has actually spurred greater spending and revenue for local businesses as customers who walk or bike to the district tend to spend more time (and therefore more money) at these businesses than customers who would previously drive to the district. While local governments adopt better street design guidelines, the private sector should support and advocate these investments as an opportunity to improve the desirability of existing and future developments.

*2. We can rethink our streetscape and building design for better access for all.*

Many buildings and developments have increasingly turned their back on the public right-of-way to face and serve tenants and visitors who are entering from a parking garage or parking lot. Large setbacks behind surface lots make these developments unapproachable and even unsafe for pedestrians and transit riders accessing main entrances on foot from the street by requiring them to cross large spans of parking. Even in areas with little to no setback, commercial properties have often closed building entrances facing the sidewalk in favor of controlled access from a more parking-centric entrance. Along Wilshire Boulevard in Los Angeles, for example, even historic building entrances have been shuttered with the new primary entrance positioned at the back of the building — from the parking lot. Cities must require through zoning and/or other design guidelines that our buildings and streetscapes serve to activate the public realm with people, including the growing population of shared mobility users who are being dropped off. Developers must prioritize and designers must

advocate for buildings that serve active transportation access and other alternatives to the single occupancy vehicle, especially when considering an autonomous future.

*3. We can eliminate parking lots and structures for higher and better uses than vehicle storage.*

Here are three troubling statistics for consideration: the County of Los Angeles has an estimated 200 square miles of parking;<sup>3</sup> there are roughly six parking spots per vehicle in the United States; and the average vehicle is parked approximately 95 percent of the time.<sup>4</sup> Through a combination of AV, car sharing and right-sizing car ownership, it is estimated that up to 85 percent of automobiles in cities can be eliminated with a significant impact on congestion and creating a sea change for the auto industry.<sup>5</sup> By creating a culture of shared mobility today and working efficiently to adapt our digital and physical infrastructure to support AV in the future, cities can redefine the use of its public right-of-way and alleviate pressures on the built environment that currently support single occupancy vehicles and their onerous parking requirements. We can reclaim this land given to the automobile for public open space, public safety, programming and higher density development.

Policies and regulations are based on the technologies of the past, defined by the information that decision-makers had at the time. Rules for parking are generally based on building use and square footage with little consideration for location or proximity to public transit. This approach is outdated and fails to address additional variables that impact personal choices and behavior. The “Right Size Parking” project in King County (Seattle, Wash.) found that block size, population and job density, and walk and transit access to trip destinations influence parking utilization, in some cases by as much as 50 percent.<sup>6</sup> Since developers cannot factor these considerations into their project plans, costly and often underused parking spots are added to the inventory. Adopting a parking calculator tool similar to the King County Right Size Parking Calculator, defining parking requirements in terms of parking maximums and not minimums, and offering incentives for developers who accommodate more shared modes onsite such as bikesharing and carpooling would not only help the bottom line of projects (making the cost per

square foot of leasable space more competitive) but help reduce congestion. Cities must also rethink the entitlement process, and train its staff in urban design best practices that focus on people, not storing cars.

While some have advocated for the complete cessation on the construction of any new parking in the United States, a phased approach to implementing these changes could start with commercial developers who voluntarily accommodate multiple modes in exchange for reduced parking requirements or identifying overlays in transit-rich parts of the city. If located near existing transportation hubs, developers should be encouraged to create a travel demand management program to understand impacts and define a comprehensive approach to balancing all of the different ways people may access their building — whether on foot, bicycle, bus or shared vehicle. Travel demand management measures could include carpooling, vanpooling, subsidized or bulk-rate transit passes, on-site carshare service and parking, guaranteed rides home, telecommuting, unbundled parking, parking cash-out, education and program support, emergency transportation, transit shuttles and bicycle commuter facilities.<sup>7</sup> Savvy developers and cities could also change parking design standards to allow for such structures to be easily converted in the future.

Reforming parking policies to enable more shared use of parking is another interim consideration. Decoupling parking from the sale or lease of housing units would give property owners more flexibility to sublease or share parking with other users during nonpeak periods. In Santa Monica, California, a tech incubator created its own app to help tenants find available parking spots that were not directly associated with its building since the property was already in a transit rich area and did not need to provide the number of parking spots that would have been typically required by code. In San Francisco, California, a building developer offered potential tenants \$100 in ride-hailing service credits to incentivize going car-free, thus eliminating the parking demand on the property. Creating more flexibility in the market can help incentivize alternative methodologies to supporting transportation to and from a building without being limited to just supporting the single occupancy vehicle. As new technologies emerge and

transportation behaviors change, cities need the flexibility to support new modes and access options. Estimates for the construction of parking can range from \$35,000 to \$50,000 per space. Developers should advocate for the elimination of parking requirements and push financial institutions to create new financing formulas to free up finance for projects seeking alternatives to constructing new parking. Cities should adopt codes that allow for parking structures to be constructed with more flexibility to be adapted for other uses as mobility services continue to evolve. In Denver, developers are already testing these alternatives in anticipation of the future of urban mobility.<sup>8</sup>

*4. We can optimize the accessibility of our communities through better land use strategies.*

Affordable transit-oriented development can improve communities by making it easier for people to choose transportation options near where they live and work. First and foremost, development should strive to reduce the burden of transportation on household budgets — the second highest monthly expense. Better connecting goods, services and people can help economic expansion and growth. Development should be scaled to and centered on accommodating multiple modes, including automobile and transit networks as well as pedestrian, cycling and eventually automated vehicle networks.

Transportation and land use are inseparable and current methods for evaluating transportation services do not account for the productivity of land use or overall market productivity — rather they rely on delay-based metrics. Integrating these considerations can help cities deliver better planning and services. Furthermore, today's technologies help meet people's demand in real-time, reducing the impact of mobility on our environment and society through greater efficiency. Urban design can amplify benefits and increase options for people. Density and diversity of such development should strive to connect with mobility options. Higher density, walkable neighborhoods, with fewer parking options, tend to create the conditions for people to test alternatives to driving alone.<sup>9</sup> Cities must embrace the potential of this evolving marketplace while maintaining focus on providing equitable access to safe services. Twenty-eight percent of car trips are a mile or less according to the Governors

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Highway Safety Association.<sup>10</sup> Shared mobility can encourage greater use of transit by providing much-needed connections for the first-last mile of trips. It is important, however, to consider these services as part of a system or marketplace of solutions. Riders are going to choose the mode that best meets their needs and priorities whether it is schedule, proximity to service, cost of the trip, environmental impact or even health benefits. Providing flexibility to choose the right mode requires supportive public policy and collaboration.

AV and shared mobility are introducing exciting possibilities for cities and can revolutionize how we use the public realm. As cities grow, however, more of the same dependency on the single occupancy vehicle will bring traffic to a standstill. The public and private sector must work together today to shape a future of urban mobility that contributes to goals for livability, sustainability and access to economic opportunity. ■

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# How Smart Has Smart Growth Been?

BY WILLIAM P.J. McCARTHY, CRE

SMART GROWTH REFERS TO URBAN DESIGN AND transportation planning agendas which its adherents believe create vibrant, high density urban centers with an ever decreasing dependency on the automobile. Smart Growth is promoted as a panacea for an increasingly wide range of urban and social challenges, with its agenda now permeating many of the planning departments in cities and regional districts throughout North America. Today many bureaucrats and politicians are beholden to this agenda.

“Although smart-growth advocates like to portray themselves as underdogs, Smart Growth has not only been the dominant vision in federal legislation since 1991, it or some variation dominates transportation planning in many states and urban areas, particularly on the Pacific Coast and in some cases has been the dominant paradigm since the 1970s.”<sup>1</sup>

The contrarian view to Smart Growth is that it is little more than a cleverly marketed rehash and acceleration of control and containment urban planning strategies, with influence and power exercised by ideologically driven city planners and self-serving politicians, and their supporters.

The role of Smart Growth is central to any debate on what constitutes prudent and practical urban planning and the quality of life of its residents. The control purpose of this brief article is to try to quantify if actual Smart Growth civic results support its very premise and multitudes of promises, or not. The analysis presented herein is that Smart Growth expands and extends the politicization of a city’s real estate markets and in turn severely distorts a city’s actual livability and affordability. Smart Growth has not lived up to its rhetoric or promises.

But Smart Growth proponents and promoters have a vested interest, both ideological and financial, in seeing their brand grow. Therefore, after the passing global housing crisis of 2007-2008 when its supporters were on the defensive, they are aggressively promoting their agenda including

## About the Author



William P.J. McCarthy, CRE, has been a Counselor of Real Estate since 1995. He is based in his home town of Burnaby, British Columbia, Canada. He is a property developer for his own projects and serves as a real estate consultant on a wide range of projects for selected clients. He is a Past President of the Real Estate Institute of Canada (2009-10) and is a Senior Faculty Member of this Institute, and the author

of three of its course textbooks. Mr. McCarthy holds six university degrees and ten professional designations including his CRE. Mr. McCarthy currently serves on The Counselors of Real Estate Board of Directors and is a member of the Real Estate Issues Editorial Board. His academic work has appeared in this journal and other publications. In addition to his own work, he has completed over 3,000 pro bono real estate and business assignments.

publishing several books praising the city and Smart Growth, most of which are anecdotal and rhetorical with little statistical data, and all are dismissive of the suburbs and the social mobility they afford citizens. “To see that cities are resurgent centers of wealth and culture, all you need to do is set foot in one, or simply set foot in a bookstore,”<sup>2</sup> proclaims Leigh Gallagher in her book *The End of the Suburbs*. Other recent titles include Richard Florida’s *The Rise of the Creative Class and Whose Your City?*, Bruce Katz and Jennifer Bradley’s *The Metropolitan Revolution*, Alan Ehrenhalt’s *The Great Inversion and the Future of the American City*, Jeff Speck’s *Walkable City*, Charles Montgomery’s *Happy City* and Edward Glaeser’s “love letter to cities,”<sup>3</sup> *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier and Happier*.

These books promote the wisdom of Smart Growth, while demonizing the suburbs, using the term urban sprawl as a prerogative. From its inception, the Smart Growth movement has been convinced of its intellectual superiority, stating that the choice is about either “the idiocy of suburban sprawl or the superiority of Smart Growth.”<sup>4</sup> In order to create

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traction and entrench this agenda, a series of alliances have been formed under the Smart Growth umbrella, such as the anti-automobile group and those focused on environmental issues. “Sustainable” and “Green” have become watchwords for urban designers, who tend to use the terms rather interchangeably to express their concerns about the effects of development on the local and global environment.<sup>5</sup> While Smart Growth proponents may argue that their movement is hegemonic, it more accurately resembles a coalition, or alliance, of self-interests. “Although many opponents of sprawl believe their beliefs are based upon a rational and disinterested diagnosis of urban problems, their actions often involve powerful, even if usually unacknowledged, self-interest.”<sup>6</sup> Smart Growth in actual practice is politicization of urban real estate. Therefore, how smart has Smart Growth in practice actually been and who has benefited from it? To answer these primary questions, we need to consider and address the following:

- By its own definition and agenda, what is Smart Growth?
- Is Smart Growth a movement or a theory, or in actual practice a coalition or an alliance of convenience of groups and elites who support and use one another to achieve their own specific objectives? This paper will propose that while Smart Growth was initiated as a theoretical movement, in practice it is a politically expedient alliance of self-interests.
- What are the Smart Growth city meccas and what lessons can we learn from examining them? This paper briefly analyzes what has occurred in three of the most often cited Smart Growth successes in the world: Portland, Oregon, Vancouver, British Columbia and Copenhagen, Denmark.
- What have been the actual measurable results and consequences of Smart Growth on cities? Are citizens actually better off in Smart Growth cities or the suburbs? This is central to the future debate. In his balanced analysis, *Sprawl: A Compact History*, Robert Bruegmann proposes that perhaps the professed Smart Growth solution promoted by a few is far worse than any perceived problem associated with the suburbs or sprawl, stating, “our highly-dispersed urban regions deserve some respectful attention before

we jump to the conclusion that they are terrible places that need to be totally transformed.”<sup>7</sup>

Regardless of how commendable the idealism of its proponents might have been, Smart Growth has created its own set of problems in practice, especially with regards to housing affordability. That its proponents have not adjusted their position to reflect realities has revealed that the self-interests of the various members of the Smart Growth alliance trump this proposed idealism.

#### **WHAT IS SMART GROWTH?**

Smart Growth traces its origins to an assortment of new urbanism movements which believe central planning by supposed experts will create civic oases within any city, regardless of its size, location, history and diversity. The genesis of the current Smart Growth movement took place in 1991 at a conference at Yosemite Park’s Ahwahnee Hotel where two groups, one led by the husband and wife architect team of Andres Duany and Elizabeth Plater-Zyberk and the other by transit planner Peter Calthorpe, met with their counterparts to discuss how to reconcile their differences of opinions and objectives while focusing on their shared belief in a more ideological and centralized approach to planning and urban design. (The Duany group was focused more on community development, while the Calthorpe side stressed transportation as the way to structure and restrict or encourage urban development.) From this conference a set of design principles known as the Ahwahnee Principles were adopted to address the group’s belief that, “existing patterns of urban and suburban development seriously impair our quality of life.”<sup>8</sup>

The anecdote proposed was Smart Growth, a term first promoted by Maryland Governor Parris Glendening in 1996, whose office used it, “because it was ‘hard to oppose’: anyone who questioned Smart Growth could be (and usually was) immediately accused of favoring “dumb growth.”<sup>9</sup> From its inception, Smart Growth and its leaders have self-promoted themselves as intellectually and morally superior to their counterparts as highlighted by their own words. “What has emerged from these primordial rumblings is a sort of unified field theory ... a half-century of, yes, dumb growth has put our nation and our species in a truly precarious position. The movement against suburban sprawl, which began

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principally as an aesthetic and social critique, is now working in the service of science.<sup>10</sup> Smart Growth has subsequently become a slogan affixed to an urban and political control agenda. The following six goals are the verbatim extracts from the Smart Growth playbook:<sup>11</sup>

- 1. Neighborhood Livability.** The central goal of any Smart Growth plan is the quality of the neighborhoods where we live. They should be safe, convenient, attractive and affordable for all people. Sprawl development too often forces trade-offs between these goals.
- 2. Better Access, Less Traffic.** One of the major downfalls of sprawl is traffic. By putting jobs, homes and other destinations far apart and requiring a car for every trip, Sprawl makes everyday tasks a chore. Smart Growth's emphasis on mixing land uses, clustering development, and providing multiple transportation choices helps us manage congestion, pollute less, and save energy.
- 3. Thriving Cities, Suburbs and Towns.** Smart Growth puts the needs of existing communities first. By guiding development to already built-up areas, money for investments in transportation, schools, libraries, and other public services can go to the communities where people live today.
- 4. Shared Benefits.** Sprawl leaves too many people behind. Divisions by income and race have allowed some areas to prosper while others languish. As basic needs such as jobs, education and health care become less plentiful in some communities, residents have diminished opportunities to participate in their regional economy. Smart Growth enables all residents to be beneficiaries of prosperity.
- 5. Lower Costs, Lower Taxes.** Sprawl costs money. Opening up green space to new development means that the cost of new schools, roads, sewer lines and water supplies will be borne by residents throughout metro areas. Sprawl also means families have to own more cars and drive them further. And where convenient transportation choices enable families to rely less on driving, there's more money left over for other things, like buying a home or saving for college.
- 6. Keeping Open Space Open.** By focusing development in already built-up areas, Smart Growth preserves rapidly vanishing natural treasures. From forests and farms to wetlands and wildlife, Smart Growth lets us pass on to our children the landscapes we love. Communities are demanding more parks that are conveniently located and bring recreation within reach of more people. Also, protecting natural resources will provide healthier air and clearer drinking water.<sup>12</sup>

To achieve these lofty goals, Smart Growth America outlined a ten step guide to implement and achieve Smart Growth. This checklist's words are purposely generic, with no means proposed to measure actual results and benefits. To Smart Growth consultants, their mantra is simply to show "the idiocy of suburban sprawl ... and the superiority of Smart Growth."<sup>13</sup>

- 1. Mix Land Uses.** New, clustered development works best if it includes a mix of stores, jobs and homes. Single-use districts make life less convenient and require more driving.
- 2. Take Advantage of Existing Community Assets.** From local parks to neighborhood schools to transit systems, public investments should focus on getting the most out of what we've already built.
- 3. Create a Range of Housing Opportunities and Choices.** Not everyone wants the same thing. Communities should offer a range of options: houses, condominiums, affordable homes for low income families and "granny flats" for empty nesters.
- 4. Foster "Walkable," Close-Knit Neighborhoods.** A compact, walkable neighborhood contributes to people's sense of community because neighbors get to know each other, and not just each other's cars.
- 5. Promote Distinctive, Attractive Communities with a Strong Sense of Place, Including the Rehabilitation and Use of Historic Buildings.** In every community, there are things that make each place special, from train stations to local businesses. These should be protected and celebrated.

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- 6. Preserve Open Space, Farmland, Natural Beauty, and Critical Environmental Areas.** People want to stay connected to nature and are willing to take action to protect farms, waterways, ecosystems and wildlife.
- 7. Strengthen and Encourage Growth in Existing Communities.** Before we plow up more forests and farms, we should look for opportunities to grow in already built-up areas.
- 8. Provide a Variety of Transportation Choices.** People can't get out of their cars unless we provide them with another way to get where they're going. More communities need safe and reliable public transportation, sidewalks and bike paths.
- 9. Make Development Decisions Predictable, Fair and Cost-Effective.** Builders wishing to implement Smart Growth should face no more obstacles than those contributing to sprawl. In fact, communities may choose to provide incentives for smarter development.
- 10. Encourage Citizen and Stakeholder Participation in Development Decisions.** Plans developed without strong citizen involvement don't have staying power. When people feel left out of important decisions, they won't be there to help out when tough choices have to be made.

But is one set of guidelines even remotely practical for all cities to follow? There are currently 4,000 cities on the planet today with a population of 100,000 or more.<sup>14</sup> Each of these cities is unique, the result of its geography, history, culture and people. Those opposed to Smart Growth believe that due to the uniqueness of each city and indeed each country and continent, a one size fits all approach to urbanism is impractical and impossible to enact. "The presumption that American and European prescriptions for cities are transferable often leads to quite absurd results."<sup>15</sup>

Conversely, the Smart Growth movement believes that central planning can indeed work regardless of the locale. "On the contrary, the language of U.S. sprawl and its containment is now readily borrowed and applied in studies and policy prescriptions for cities in developing countries as if it were self-evident that sprawl is, indeed, a universal phenomenon requiring a universal response."<sup>16</sup>

In order to promote and implement such an ambitious agenda, its proponents require control over planning processes at the civic and regional levels of governments, while leveraging the political clout of heavily populated cities (and their vote) to secure government funding for its heavily tax subsidized agenda. In order to secure this support, and then exercise this new power, the Smart Growth movement morphed into an alliance of convenience between groups with some shared interests, but with their own ideological and financial agendas required. From the start, two cities, Portland, Oregon and Vancouver, British Columbia (the author's home region) were heralded as paragons of Smart Growth virtues. These two cities show Smart Growth has not evolved as envisioned. In the case of Vancouver its housing affordability crisis has severely altered its former poster city status.

## **PORTLAND**

Portland, Oregon is the most referenced Smart Growth city. Its success or failure is critical to this subject. "Why is this debate so acrimonious and how can the basic facts in the case be so much in doubt? Perhaps the most plausible answer is that because Portland has become the prime symbol of the anti-sprawl campaign, the question of whether the 'Portland system' works or doesn't work has enormous ideological significance."<sup>17</sup> Portland's prevalence in the Smart Growth movement has perhaps more to do with its culture and politics, as, "economically the city did so poorly in comparison with other American cities and many of its West Coast neighbors during much of the mid-twentieth century ... it has remained a small city with neither the pollution that heavy industry would have generated nor a large and poor minority population."<sup>18</sup> Portland, therefore, was not necessarily the best template to build the Smart Growth agenda on.

Portland's much touted successes in urbanism have been scrutinized extensively, especially by former Portland resident and persistent Smart Growth critic Randal O'Toole. For several years O'Toole has systematically examined the land use and transportation policies of the Portland Metropolitan region. In 2007 he wrote an analysis entitled "Debunking Portland: The City that Doesn't Work."<sup>19</sup> While Portland has won numerous awards from the

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American Planning Association and other similar groups, and is always cited as the primary North American example of progressive urbanism and Smart Growth, O'Toole counters much of the hype by contrasting the rhetoric with actual results, stating that Smart Growth has limited housing options and choice, increased taxes and simply has "not produced the utopia planners promised."<sup>20</sup>

The Smart Growth movement invested very early much of its ideological capital in Portland, a city whose politicians and planners embraced the chance to not only brand their city, but themselves. Well before real scrutiny on what Smart Growth actually delivered began, the Portland model had been implemented in cities throughout North America. This prevalence has been questioned by academics such as Robert Bruegmann who questions this reference.

"After more than twenty-five years in operation, the results of the Oregon (Portland) experiment are controversial and puzzling. Growth control in Portland, like the text of the Bible, seems to provide almost anyone studying it evidence to bolster a preexisting viewpoint. According to proponents and many of the journalists writing for the national press, the Portland area growth management system has accomplished most of its goals. These individuals say that the Portland region today remains a highly livable, green metropolis that has managed to control its own destiny by careful planning ... Other observers range from skeptical of specific claims to adamant that the system as a whole has been a failure, and a fraud to boot."<sup>21</sup>

Like Portland, Vancouver was often touted as a Smart Growth mecca. Both cities' progressive politicians and planners shared visions and policies. (Vancouver's new Director of Planning previously held this title in Portland.) But Vancouver is now a prime example of the unintended (but not unexpected) consequences of Smart Growth.

### VANCOUVER

Vancouver, British Columbia, is one of the most stunningly beautiful cities in the world. Few (including this author) can imagine living anywhere else. Its natural setting, with the North Shore mountains framing the region's peninsula which juts

out into the Pacific Ocean's Burrard Inlet captivates visitors. The unquestionable crown jewel of the city is Stanley Park, the 1,000 acre tip of the peninsula which lies beside the city core and has been wisely left unspoiled since the city's founding in 1886. Therefore, Vancouver owes — and will always owe — its image to nature, not any planning agenda. Whenever Vancouver places at or near the top of most beautiful or livable cities in the world, it is the city's natural beauty that earns the most praise and points, and which offsets deductions for the cost of housing and living in the region. Vancouver is not a large city. With a population of 603,502 it currently sits as the 580<sup>th</sup> largest city by population in the world.<sup>22</sup> Vancouver is also evolving into becoming two cities. Its heavily congested downtown core, formerly the center of its business community, has been transformed by high-rise residential condominiums replacing office towers.

It is this downtown core which has been the focus of Vancouver's Smart growth experiment.

Vancouver currently sits atop the Metro Vancouver Regional District, which is comprised of 21 neighboring municipalities, whose combined population is 2,313,000.<sup>23</sup> Because Vancouver was able to effectively control and/or influence the Greater Vancouver Regional District (GVRD) (now known as Metro Vancouver), much of the entire region's policies have been reflective of a general Smart Growth agenda, which focuses on the broad themes of livability and sustainability and the promotion of Vancouver itself. The region's 1996 strategy paper entitled "Livable Regions Strategic Plan,"<sup>24</sup> has formed the basis of all central planning in the region to date. This strategic plan, like similar Smart growth documents copied throughout North America offer a wide focus while being non-specific with regards to benchmarks, setting metrics and cost benefit analysis. The new current strategic plan attempts to map out land use policy to 2040 (a date used with remarkable consistency within the Smart Growth movement). This plan does not identify short comings of previous plans, nor address previous assumptions which proved false. Nowhere does the plan rationally address how you can achieve livability without affordable housing for actual residents. "District planners narrowly focused on two goals: avoiding urban sprawl and minimizing automobile

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driving.”<sup>25</sup> They have deliberately ignored warnings about instituting a control agenda.

Back in 1973, three years before Vancouver’s first regional district plan was implemented, the region hired internationally known planner Hans Blumenfeld to review its proposed strategies. Blumenfeld had helped prepare Toronto’s regional plan and was the author of the 1967 book, *The Modern Metropolis: Its Origins, Growth, Characteristics and Planning*. Expecting to be complimented on the region’s vision, these planners and politicians were instead warned that their focus and efforts would little reduce automobile driving and that containment and green and agricultural zones, no matter how well intentioned, would impose high costs and housing affordability issues for future residents, who he argued strenuously were not yet part of the region and would eventually pay the costs associated with policies so far reaching. Blumenfeld warned that planners should not presume to know either the preferences or future needs of a region’s residents better than those residents themselves. He noted that, “in 15-20 years, 80 percent of the population of the GVRD will consist of persons who are not here yet. They have no vote but it is their living conditions which are determined now.”<sup>26</sup> Perhaps it was Blumenfeld’s memos stating that the individual mayors and councilors, who made up the GVRD Board, were in an inherent conflict of interest about the future growth of the region that stymied his perceptive warnings.

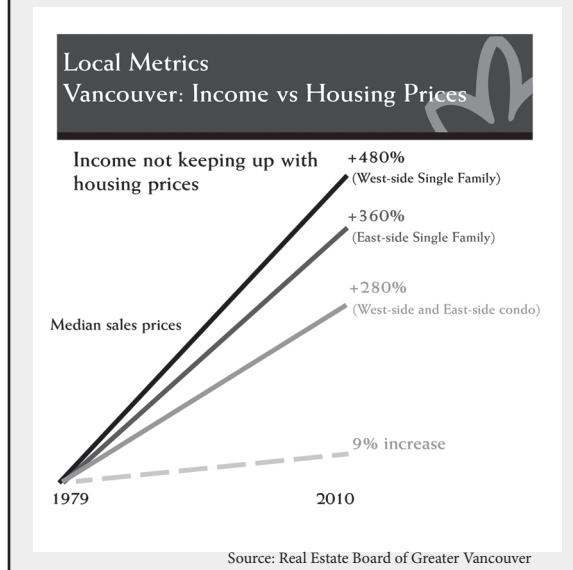
It is no secret that concerns about urban sprawl were partly motivated by fiscal considerations, forced on the municipalities by their almost complete dependence on the real property tax. People who own homes outside of the city do not pay taxes to the city. By restricting rural development, the officials who approved the regional plan were enhancing the revenue base for their cities.<sup>27</sup>

To drive home the point, and based upon his global experiences, Blumenfeld warned that since expensive homes pay higher property taxes than less expensive ones, cities had a financial incentive to approve expensive housing, including high-rise condominiums, and actually discourage affordable housing. The results, he argued, were quite predictable. Greater Vancouver would incur, “oligopolistic high land prices, which are usually

blamed on speculator and large scale developers, but in fact are created by municipal policies.”<sup>28</sup> This is exactly what has occurred in the City of Vancouver and has spread throughout the region. In addition to its now horrendous real estate matrix and affordability, Vancouver’s transportation system is a mess, and the overall infrastructure of the region undersized for its growth. The goals of livability and sustainability that the region’s planners subjectively promised have not been realized, and it can be argued have effectively been compromised due to unaffordable living costs and resulting in an economy now based largely upon real estate speculation, much of it foreign influenced. This may surprise those in the planning and real estate and development communities.

When a city loses control of its housing market, it eventually loses control of much of its economy. Vancouver’s housing is now the second least affordable in the world, and with that gap, wages and housing costs widens each year. The following table, produced by the City of Vancouver itself, shows that for the past thirty years, a period simultaneous to the implementation of Greater Vancouver’s Livable Region Smart growth plan, median incomes moved up only 9 percent in three decades, while the steep trajectory of its housing prices paralleled the launch

**Table 1**  
**Vancouver’s Income and Affordability Gap — 1979-2008**

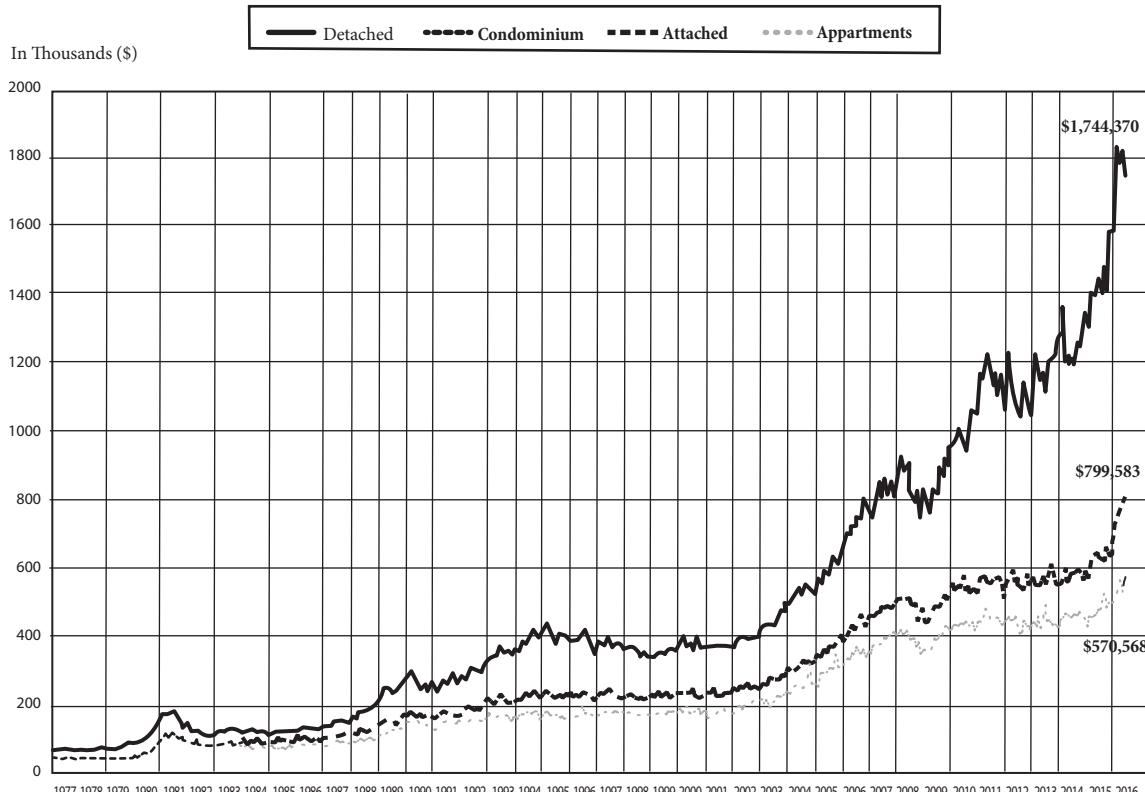


With the 22<sup>nd</sup> Highest Incomes in Canada; Vancouver is the 3<sup>rd</sup> Most Expensive Housing Market in the World. This chart was at the time of collapse in global real estate markets. The affordability gap in Vancouver has widened since.

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Table 2  
Vancouver's Residential Average Sale Prices 1977 – 2016  
Smart Growth in Practice

Residential Average Sales Prices - January 1977 to May 2016



of the region's Smart Growth zoning containment strategy. The gap has widened considerably in recent years.

While the Livable Region, the Greater Vancouver Region central planning document focused on two goals, livability and sustainability, was light on actual numbers and benchmarks, planners and politicians had to realize early that their region's housing matrix was volatile. The failure of planners and politicians alike to first acknowledge they had severely miscalculated the financial consequences of their Smart Growth agenda was only exceeded by their failure to retreat from these policies.

When you examine Vancouver's housing data one has to ask, how could a city allow such a disparity to occur, perpetuate and even accelerate? These disparities have been accelerated when Vancouver alone in the world failed to place any restraints on foreign investment of its residential markets.<sup>29</sup> As a direct consequence, Vancouver real estate has become a commodity. While much of the world believes Canada escaped the recent global real estate meltdown unscathed, that their banking system is sound, and that at worst a downward correction in housing prices will be at worst a "soft landing" (and not a bubble burst), this does not hold up to scrutiny. If you live in Vancouver, based upon its housing

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prices and wage structure, the housing affordability index indicates that depending on the housing type, fully 41.8 percent (condominium) to 87.8 percent (two story house)<sup>30</sup> of pre-tax income is required to be able to qualify for the standard mortgage underwriting ratios. This explains why Canadians are now spending \$1.65 — \$1.70 for every dollar earned, higher spending than occurred in Europe and the United States when their housing bubbles burst.<sup>31</sup> Residential real estate there is more a commodity and not about homes for people living and working in the city. This is completely contrary to what should motivate one to purchase residential real estate, according to Richard Florida. "Housing is different from other investments and for a very simple reason. The primary purpose of investing in a home is not to make money but to have a roof over one's head."<sup>32</sup>

And Vancouver's median family incomes are well below the Canadian average of \$76,040.<sup>33</sup> Vancouver, the country's third largest city and Pacific gateway, has a median family income (2011) of \$68,970.<sup>34</sup> Out of 28 Metropolitan cities surveyed by Statistics Canada, 21 had far higher median family incomes, with none being close to Vancouver's housing prices. While Vancouver has long been the country's most expensive housing market, with its natural beauty most cited as the reason, the city's Smart Growth policies coupled with no restrictions on foreign purchases have rapidly accelerated this disparity and Vancouverites are paying more for less, with 500-700 square feet units, not the 900 square foot unit national average now common. The city's owner occupied housing stock (2011) is 35 percent and rising — "the highest market share by far in Canada."<sup>35</sup> By comparison in the United States there are 4.4 million owner-occupied condominium units, which represent 5.8 percent of the country's total owner-occupied housing supply, well below Canada's overall total of 12.6 percent and Vancouver's 35 percent.<sup>36</sup> Rather than admit Smart Growth had harmed the region and reversed course, the region and, in particular, the City of Vancouver continued to build not for the local, but for the foreign market, most notably the mainland Chinese. Vancouver, where only 49 percent of the residents speak English, and 25 percent have Chinese as their first language "is no longer a domestic market — what occurs in China is now a greater effect on our housing markets, not the action of local residents."<sup>37</sup>

Nowhere in any Smart Growth literature or projections is such an occurrence even contemplated. With control of their domestic housing market now largely out of the control, politicians and planners are now scrambling for solutions to Vancouver's housing affordability crisis. While much of their plans are hybrids of the same Smart Growth policies that created the crisis, regional planners still try to be innovative, such as the move to laneway housing of which 1,000 building permits have been issued over the last five years in Vancouver. Unfortunately, these units, which replace the former garage in the alley, cannot be more than 750 square feet and must remain part of the main property's title, are expensive. The average cost to complete a Vancouver laneway house, which incorporates about \$85,000 in combined building fees and site costs, range from \$250,000 to \$350,000.<sup>38</sup> Based upon current U.S. housing pricing averages, in selected American markets you could buy two detached homes for the price of one Vancouver laneway house.<sup>39</sup>

Vancouver's planners and politicians thought they could control the Smart Growth genie, but instead are now trapped by its limitations. As a result, their plans to join the city's green agenda and extensive social housing and community plans to its Smart Growth strategies has made the city extremely vulnerable on many levels.

### **SMART GROWTH: RHETORIC VS. RESULTS**

From its inception Smart Growth set a very high bar for itself, with its proponents proclaiming moral and intellectual superiority for their agenda, while always being dismissive of its opponents. Smart Growth promises and rhetoric have fallen well short of their stated objectives. Table 3 restates the six key goals and criteria which the proponents of Smart Growth use to promote their agenda. In actual practice, the goals do not live up with the results to date.

If Smart Growth has failed to meet its own targets, what lessons should be learned from this experiment in urbanism? The following seven conclusions and recommendations to date are offered so as to continue this debate on urbanism and to create cities which are actually livable and sustainable proceeds based upon facts and best practices.

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Table 3 The Six Key Criteria to be Achieved through Smart Growth: Rhetoric vs. Results		
Criteria	Results	Verdict
<b>Neighborhood livability</b>	Smart Growth containment strategies limit socio-economic mobility and livability. Housing costs, the main determinant of livability, become excessive and prohibitive.	<b>Criteria not achieved.</b>
<b>Better access, less traffic</b>	Cities are still automobile dependent. Economies still are automobile based. Limited success in government's attempts to increase and enhance mass transit. Failures to expand and maintain infrastructures and roadways create gridlock.	<b>Criteria not achieved.</b>
<b>Thriving cities, suburbs and towns</b>	The suburbs remain the preferred choice due to housing affordability and space. Cities are reflective of their economies which are dependent on stable and affordable housing.	<b>Criteria not achieved.</b>
<b>Shared benefits and prosperity</b>	Rather than share benefits, dense city cores and their citizens are often subsidized by their suburbs and many inner city programs by the taxpayer in general.	<b>Criteria not achieved.</b>
<b>Lower costs, lower taxes</b>	The Achilles heel of Smart Growth. Artificial land constraint policies distort supply and demand in the free market. Housing affordability decreases as housing prices and taxes rise, often in favor of foreign investors who inflate the housing market at the expense of the locals themselves. Overall costs of living rise.	<b>Criteria not achieved.</b>
<b>Keep open space open</b>	Smart Growth cities' green space and park inventory should be examined and classified pre- and post-1990. How much open and green space was provided in the past, and what has been created and provided in the last 20 years with the implementation of high density Smart Growth planning? Also, how much green space per capita in the same time frames? Where do city residents go to recreate — likely the suburbs.	<b>Criteria not achieved.</b>

**1. SMART GROWTH IS AN OXYMORON. IT IS ABOUT CONTAINMENT AND POLITICAL CONTROL AND FAVORITISM.**

Smart Growth mislabels what has actually been practiced within cities that profess to exercise this agenda. As pointed out throughout this paper, Smart Growth is essentially about a few controlling the future of many. Through an ideologically driven containment strategy Smart Growth is an artificial use and application of restrictive zoning and development practices at the expense of the free market circumstances prevalent within industrial cities. By its nature and practice, Smart Growth puts groups into perpetual conflicts of interest. It is not smart, but cronyism in action. Smart Growth should be referred to and re-labelled as containment zoning. But are such policies and denigration of the suburbs really necessary? Are not the best functioning metropolitan cities a core-suburb

combination? Characteristics we associate today with sprawl have actually been visible in most prosperous cities throughout history. Sprawl has been as evident in Europe as in America and can now be said to be the preferred settlement pattern everywhere in the world where there is a certain measure of affluence and where citizens have some choice in how they live.<sup>40</sup>

**2. CITY AND REGIONAL PLANNING SHOULD BE BALANCED. STRATEGIC PLANS SHOULD BE SHORT TERM AND TARGET BASED.**

Reporting and rating the well-being and strength of a city should not be anecdotal, rhetorical or self-serving. Civic pride is one thing. Presenting one city as a national or global standard for others to emulate is another. But this is what the Smart Growth movement has always done. They need champions to promote their agenda and this in turn has led to cities,

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such as Portland and Vancouver being offered as model cities to replicate. But this one size can fit all model of urbanism goes against common sense. Each city and its people are unique and reflective of the geography, climate, history, culture, demographics and economy of the city and metro region. Rather than impose ideology, urbanists should encourage best practices and basic analytics which can be used to improve quality of life and outcomes. Some of these analyses and benchmarks would include:

- Housing affordability;
- Housing options and the cost thereof;
- Infrastructure and transportation planning and funding;
- The financial and budget viability of the city including its long term pension and infrastructure liabilities;
- Property taxes and economic development and viability;
- Guidelines for green, park and school space per capita;
- The per capita costs and best practices basic and essential civic services such as waste removal, water, safety and security and the civic government itself; and
- There must be a clear division and transparency between the real estate and development industry and bureaucrats and politicians, to avoid conflicts of interest.

Developers and politicians use one another. This is self-evident when examining Smart Growth not in theory but in action. Smart Growth influences Official Community Plans and development bylaws favor density and control over the land supply — but their interpretation is always subjective and far too often political, with zoning approval density lifts tied to fee and amenity kickbacks to the city. Civic budgets are also increasingly dependent on development cost charges to fund their operating budgets, which together with always rising property taxes, reduce housing affordability and make the commercial real estate market cost prohibitive. What emerges are crony capitalism and a weakening of the market economy. Political connections and campaign funding should not be as important to a firm's success as their track record and skillset.

### 3. IT IS THE PLANNERS AND POLITICIANS THAT MUST BE CONSTRAINED, NOT THE FREE MARKETS.

The more complex planners and politicians make city planning and governance, the more poor decisions and mistakes they will make. Smart Growth in practice diverts focus and attention, and financial resources, away from the basics — running a city. Instead, most Smart Growth cities are now locked into arbitrary 20-30 year strategic growth plans that they refused to repudiate.

“Planners today rely heavily on the ‘visioning’ process in which planners or a few members of the public try to imagine what they would like their region to resemble in twenty years or more.”<sup>41</sup>

If politicians either buy into this Smart Growth visioning process, and/or do not challenge their staff to justify past and proposed actions, then there are no effective checks and balances over their city’s evolution. Politicians become first complacent by their silence, and then often advocates who are willing to spend and commit city resources in support of actions and practices they perhaps did not fully understand or comprehend. In practice, how many civic politicians, or even their senior planners and bureaucrats, have the education, experience, expertise and other skills commiserate with making multi-million dollar strategic decisions? As virtually all do not, should not a slow and cautious approach green their actions, combined with a very healthy dose of skepticism when schemes are placed before them?



#### Should Politicians and Bureaucrats Micro and Macro Manage Your Life?

Randal O'Toole's comprehensive overview and criticism of government planning, Smart Growth, and how it limits personal choice and quality of life. Easily comprehended and applicable land use policies and zoning guidelines are essential for orderly residential and commercial growth. Clearly understood and fairly and consistently applied zoning uses and development bylaws are fundamental to a city and region's prudent growth. This limited use of government is in contrast to the Smart Growth agenda which seeks to maximize government and political control over free markets and individual choice.

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### **4. ACTUAL SMART GROWTH RESULTS AND CONSEQUENCES MUST BE QUANTIFIED, MEASURED AND DEBATED.**

The performance of real estate is relatively easy to both measure and quantify. Therefore, with regards to the promise, practice and actual outcomes of the Smart Growth agenda, a means and a method to assess its policies and grade them should be proforma. For example, Smart Growth studies and planning documents which have been embraced by many cities and regional governments always refer to the twin objectives of creating livability and sustainability, but how are these terms defined and a city's adherence to them measured? To move away from either overly rhetorical attacks or defense of Smart Growth, its proponents should be able to address and measure objectively results to the following key questions and then debate the validity or not of the Smart Growth agenda.

- What defines livability and how can it be measured and quantified?
- What defines sustainability and how can it be measured and quantified?
- Housing price indexes that show a significant disparity between median household income and median housing prices in Smart Growth cities. Why? What is the correlation of this disparity between housing affordability and Smart Growth policies?
- How do property tax mill rates and assessments and taxation policies compare between those cities with Smart Growth land use policies and those without?
- What percent of property taxes and what percent of civic budgets are derived from commercial property classes and residential properties in Smart Growth cities? Is there a disparity between Smart Growth city taxation policies and those cities without such policies?
- What percent of a Smart Growth city's annual budget derived from Development Cost Charge levies and other fees and payments are directly tied to the granting of development permits and density bonusing? How dependent have Smart Growth city budgets become on this revenue stream?
- Are city annual operating and capital costs in Smart Growth cities stable or not? What is their overall financial status — especially with regards to its infrastructure, long term debt and employee pension requirements?
- How objectively, consistently and fairly have Smart Growth cities applied their zoning bylaws, density bonusing, development design terms and projects? Does Smart Growth eliminate political interference and favoritism or increase it?
- Has Smart Growth policies and the cost of living associated with them actually increased the growth of the suburbs as people seek more socio-economic mobility, more affordable housing options and traditional detached homes and yards?
- What are the short and long term physiological and socio-economic impacts on individuals and communities increasingly residing in high rise condominium towers as opposed to traditional mixed-use communities and suburbs?
- Should green space/green use be quantified on a per capita basis? How can cities provide sufficient green space, green amenities and recreation facilities in dense downtown urban cores in sufficient quantity and quality for their population?
- Is it even possible to propose or promote a "happiness matrix" based upon urban design policies? Are cities a panacea to solve societal inequities and problems or a breeding ground for more of the same? How important is individual choice and socio-economic mobility of individual citizens to the well-being and growth and enhancement of cities?
- How exactly do dense urban core cities survive and function without their suburbs — especially as this urban-suburban tandem has been the norm for cities throughout history?

In essence, these and other questions are meant to actually assess and determine whether or not Smart Growth has proven to be a smart proposition

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for those cities which practice some form of it. Unquestionably, Smart Growth has raised housing costs, which in turn raise the overall cost of living. What can Smart Growth offer in exchange for such a direct impact on its citizens? That Smart Growth defenders continue to disparage the suburbs and other anecdotal and rhetorical soundings would seem to indicate that they cannot defend their brand objectively.

**5. HOUSING AFFORDABILITY: THE ACHILLES' HEEL OF SMART GROWTH MUST BE ACKNOWLEDGED AND ADDRESSED**

Early Smart Growth proclamations stated that its principles would provide a plethora of housing and neighborhood options, all situated in thriving communities that would be increasingly less auto dependent. While never overt in their claims about decreased housing costs, it was

certainly implied that while “sprawl costs money,” Smart Growth did promise “lower costs, lower taxes,”<sup>42</sup> and would “create a range of housing opportunities and choices.”<sup>43</sup> This has clearly not occurred over the past generation. Empirical data shows that property taxes go in only one direction: up; that services once contained in the property tax bill (such as water and garbage removal) are off loaded directly to the owner and that housing prices, regardless of the unit type (detached; townhouse; condominium), and square footage, have increased.

Residents of Smart Growth cities pay directly and excessively as a result of these policies. And they may well be paying for less and less actual living space as housing prices rise.

Table 4  
**Demographia International Housing Affordability Survey: 2016**  
**Housing Affordability Rating Categories**

Rating	Median Multiple
Severely Unaffordable	5.1 & over
Seriously Unaffordable	4.1 to 5.0
Moderately Unaffordable	3.1 to 4.0
Affordable	3.0 & under

Source: Median Multiple (Median House Price/Median Household Income) 2015 – 3rd Quarter Demographia International Housing Affordability Study

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<b>Table 5</b> <b>Selected Markets Ranked By Affordability</b> <b>(Least Affordable to Most Affordable)</b> <b>(Markets over 1,000,000 Population)</b>				
International Affordability Rank	Metropolitan Market/ Country	Median Multiple	Median Price	Median Household Income
367	Hong Kong, China SAR	19.0	\$5,561,000	\$293,000
366	Sydney, NSW, Australia	12.2	\$1,032,000	\$84,600
365	Vancouver, BC, Canada	10.8	\$756,200	\$69,700
362	San Jose, Calif.	9.7	\$965,000	\$99,800
362	Melbourne, VIC, Australia	9.7	\$730,000	\$75,600
359	San Francisco, Calif.	9.4	\$809,400	\$86,100
352	London (GLA) UK	8.5	£400,000	£46,900
346	Los Angeles, Calif.	8.1	\$506,800	\$62,600
330	Toronto, ON, Canada	6.7	\$529,800	\$78,700
310	New York, N.Y.-N.J.-Pa.	5.9	\$410,500	\$69,400
308	Miami, Fla.	5.8	\$290,000	\$50,100
283	Seattle, Wash.	5.2	\$386,300	\$73,700
276	Portland, Ore.	5.1	\$319,300	\$62,300
239	Calgary, AB, Canada	4.2	\$391,500	\$94,000
216	Tokyo-Yokohama, Japan	4.3	¥30,160,000	¥7,070,000
211	Las Vegas, Nevada	4.2	\$221,500	\$53,000
202	Washington, D.C., Metro	4.1	\$388,600	\$94,300
138	Chicago, Ill.-In.-Wisc.	3.6	\$229,300	\$63,700
125	Houston, Texas	3.5	\$217,200	\$62,100
59	Detroit, Mich.	2.8	\$150,000	\$54,300

Source: Median Multiple (Median House Price/Median Household Income)  
 2015 — 3rd Quarter Demographia International Housing Affordability Study

Before 1970, the median cost of housing throughout most of America was about two times median family incomes. Today, the median homes still cost about two times median family incomes in states and urban areas that do not practice growth management. But areas with growth management have seen median prices soar to as much as 11 times median family incomes. This makes single-family housing unaffordable to all but the wealthiest people and fulfills smart-growth goals of increasing the percentage of people living in multifamily housing.<sup>44</sup>

The Smart Growth alliance did not foresee, from the start, the obvious. When you artificially constrain housing markets and supply and demand metrics, housing prices are subject to wild variations and increases. This is what occurred almost from the start in Smart Growth cities — and which planners and politicians refused to acknowledge or correct. Rather than admit they had seriously miscalculated the key variable in city building and housing affordability, the Smart Growth alliance instead shifted their focus and promotion of the agenda more towards other areas such as green agendas and the anti-automobile — pro-bicycling movement. By design, the Smart Growth crowd

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avoids both housing unaffordability and ever limiting decreasing choice. "Smart Growth needs to address the spatial distribution of affordable housing. To date, few Smart Growth coalitions have incorporated affordable housing issues into their reform agendas."<sup>45</sup>

### **6. THE SUBURBS HAVE NOT BEEN, AND WILL NOT, BE THE PROBLEM. SPRAWL IS NOT A PEJORATIVE.**

For a comprehensive and balanced history of sprawl and its relationship with Smart Growth, University of Chicago professor Robert Bruegmann's 2005 book, *Sprawl*, is an essential read. His work reveals that urban sprawl, or low density development around an urban fringe, is not a new phenomenon and dates back hundreds of years, perhaps to the very beginning of city building. Sprawl is a simple term but a complex phenomenon.<sup>46</sup> Second, he makes a compelling argument that much of the opposition to sprawl comes from various elites and special interests that are largely focused on protecting their wealth and interest and status at the expense of lower classes. Finally, Bruegmann reviews actual results of Smart Growth agendas and challenges the reader to decide whether or not the remedies for sprawl did more harm or good, especially with regards to transportation congestion and housing costs. "Anti-sprawl alarmists have presented a picture that is at best a partial one. In some cases the diagnosis of problems caused by sprawl is based on tenuous evidence. In other cases it appears to be incomplete or even just wrong. In either case, such diagnoses rarely take into account the overwhelming evidence that sprawl has been beneficial for many people."<sup>47</sup>

About "95 percent of the United States is rural open space."<sup>48</sup> This is obvious to anyone who has been in an airplane. It contradicts the key anti-suburb and sprawl argument of the Smart Growth crowd — that we are in effect running out of "space" and harming our environment. But suburbs have an enormous amount of green space, from backyards with their lawns and gardens, to parks, sports fields and other recreational space. Contrast that with hundreds of people living in smaller units stacked atop one another and with no personal green space, save perhaps a potted tiny balcony. The psychological

and physiological advantages and disadvantages between owning and maintaining a detached home with a yard to keep up versus living in a condominium unit should form a major part of the Smart Growth debate. If the Smart Growth proponents can promote a "walkability dividend," what about a "peace of mind" dividend achieved by having both house and yard space?

### **7. THE AUTOMOBILE IS NOT GOING AWAY.**

A city and region's economy are, and will remain, vehicle dependent. Individual choice is also aligned with the automobile. The Smart Growth movement has not made the case, nor can they, that people will voluntarily give up their vehicles for bikes and mass transit. They have no solution to how an economy could be sustained without automobile and truck traffic. Therefore, planners should actually plan for a transportation system that remains auto dependent, and whose transit system reflects actual and verifiable ridership and flexibility. Both systems should also be consumption cost based, with neither subsidizing the other. By following a Smart Growth, anti-automobile agenda, many cities now face huge infrastructure and roadway deficits. Their budgets are focused on other expenditures and their tax and spending priorities are not sustainable. These decisions may well accelerate the growth of the suburbs, as citizens reject the high cost and limited choice of downtown housing options and the overall cost of living and taxation. This shift in growth and influence may actually leave some city cores orphans with diminishing power and influence — victims of their own hyperbole.

The automobile and vehicular traffic continue to be the preference of free citizens. Their necessity and importance on economies will remain for generations to come. Despite efforts to demonize automobiles and roadways, Smart Growth has neither diminished people's dependence on or preference for the automobile, nor significantly increased heavily subsidized mass transit ridership.

### **CONCLUSIONS**

The Smart Growth movement ascended quickly. Within a generation, in tandem with the global

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warming and anti-automobile proponents, these groups and their leaders who believed that they could both micro and macro plan cities and regions to their visions, came to dominate much of the civic planning community. So assured were they of their wisdom, they named their movement Smart Growth, and by extension labelled opponents as practitioners of dumb growth. Along the way they have also tried to diminish the concept of the American dream, the house and yard in the suburbs, or whatever choice of housing one aspires to and is prepared to work for. As such dreams and individual choice are contrary to what Smart Growth tries to impose, the bogeyman of Smart Growth — suburban sprawl — was raised. Therefore, from the start, Smart Growth both claimed its proponents and its ideas were superior to others, and that they, not you/us, should make life defining and altering decisions for others. If something is actually Smart and good for you and yours, would you not gladly embrace it on its own merits? How has such a rapid and fundamental shift in thinking occurred in such a short period of time?

First, the Smart Growth movement and their allies are career and ideologically driven. They have been persistent. Second, they have had to win over a relatively small, and prone to group think cadre — professional planners and politicians. Smart Growth is about power and control — which appeals to these bodies. Third, natural skeptics and opponents to such schemes, the real estate and development industries, banks and business community and the media, have failed to adequately challenge or hold accountable those promoting the Smart Growth agenda. Several have become temporary beneficiaries of the agenda itself. Many in the development and real estate communities have been especially culpable. In exchange for perceived short term benefits, such as a successful rezoning application and additional building density (event though they have paid directly and indirectly for much of this), these groups who are best able to analyze the trend lines of unsustainable and unaffordable housing metrics and prices continue to work behind closed doors with city planners and politicians for short term results. To be successful in real estate requires a steady supply of consumers, in this case purchasers of residential units and commercial tenants. When a city or region loses control over its real estate market supplies, they have lost their ability to control their economic destiny.

Eventually housing and real estate corrects itself, and with it, purges those firms which did not practice fundamentals, and relied instead on cronyism.

Fourth, the public is increasingly disengaged from the political process, especially the millenials who Smart Growth advocates say they are planning for and who will face the hardest cost and consequences of its containment policies. Local government, once thought to be the quiet and least intrusive form of government, is in fact the most intrusive of the three levels.

The main focus of this article is to encourage objective analysis and debate on the merits and limitations of the various planning and political agendas currently under the Smart Growth umbrella. Smart growth proponents have now had a full quarter century to prove their claims and back these up with objective data — not their ongoing and self-serving recitation of anecdotal comments. Cities were once considered the least obtrusive and most quietly efficient level of government. Their function and responsibilities were straightforward and easily understood. Civic politicians were often hands-on and respected, moderating their power prudently, including their ability to classify, zone and tax land. But once ideologically driven planners and politicians and the coalition and alliances formed around Smart Growth emerged, cities have changed, and their futures uncertain. Cities around the world are in transition.

### **THE SUBURBS AND CITY CORES HAVE PEACEFULLY CO-EXISTED FOREVER**

*Sprawl* is perhaps the best single edition on the history of the suburbs and city cores. The book effectively argues that Smart Growth has an element of elitism to it, and that individuals themselves should determine where and how they live. The book highlights that “sprawl” is not a recent phenomenon and should not be vilified in support of Smart Growth. If Sprawl — or better defined suburbia — has always been present in one form or another throughout history, then there really is no need for a “Smart Growth anecdote” for a condition, suburbia, which has always been naturally occurring.

This article has argued that when assessed strictly against its own lofty words and promises, Smart Growth has failed. In actual practice, Smart Growth

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denotes the overt politicization of local real estate markets and resulting conflicts of interests. By demonizing suburbia, even though the suburbs have been a natural extension of cities since recorded time and remain the living preference of most citizens, Smart Growth depends more on rhetoric than facts. By proclaiming their actions as “smart,” and contrary opinions as irrelevant, Smart Growth proponents too aggressively pushed and imposed their agenda on planners and politicians without due consideration of the unintended consequences of Smart Growth in practice, especially housing unaffordability. Simply stated, Smart Growth over promised, and underperformed — big time. Smart Growth literally and figuratively has morphed into dense growth. ■

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# Raising the IQ of Smart Cities: Chicago's 'Array of Things' Urban Data Device

BY CHARLES NOEL SCHILKE, CRE

## INTRODUCTION: SMART CITIES AND THE ARRAY OF THINGS

HOW DO WE FIRM UP THE VAGUE DEFINITION OF "Smart Cities," and begin gathering the information specifically needed to implement this idea? In particular, how do we integrate multiple Information and Communications Technologies (ICT) and the Internet of Things (IoT) solutions in order to manage the assets of a city like Chicago?

Chicago, the quintessential American city, is quickly becoming the nation's leading city for data analytics. Through the "Array of Things" (AoT) (note the allusion to the "Internet of Things," one of the components of Smart Cities), Chicago is applying data analytics to urban information collection to make itself the smartest Smart City anywhere.

"Urban sensing" is a top priority for Chicago Mayor Rahm Emanuel, as outlined in the city's technology plan.<sup>1</sup> "We want to know as much about our city as we can because we know we can use that information to deliver services more effectively and efficiently," says Brenna Berman, Commissioner of the City of Chicago's Department of Innovation and Technology.<sup>2</sup>

The Array of Things is a joint project of The University of Chicago and Argonne National Laboratory, in partnership with the City of Chicago.

Chicago's Array of Things is a system of advanced urban sensing devices which has been called an "urban telescope." The AoT project is a network of modular sensor boxes or "nodes" that are being installed around Chicago to collect real-time data on the city's environment, infrastructure and activity.<sup>3</sup> Though centered in Chicago, other cities and countries are already participating in the Chicago-instigated AoT project.

The Array of Things has been likened to a "Fitbit for Cities" which measures the health of a range of urban variables like climate, air quality and noise.

The Array of Things falls squarely within the University of Chicago's longstanding traditions of urban sociology, intensively studying the city of

## About the Author



**Charles Noel Schilke, CRE,** is a commercial real estate practitioner-scholar based in Washington, D.C., working in real estate finance, development, and law. He has worked for ExxonMobil, Marriott, The American National Red Cross and several law firms. He is currently creating his own investment firm, focusing on international investment into the United States, particularly into the Washington, D.C. area. He founded and directed the graduate real estate program at Georgetown University, directed the graduate real estate program at Johns Hopkins University, and is currently teaching real estate at the University of Maryland. He is a graduate of The University of Chicago, Harvard and Cornell Law School.

Chicago, quantitative social science, and rigorous focus on the natural sciences, as well as within Argonne National Laboratory's tradition of applied science for the public good.

More broadly, the Array of Things robustly integrates several key strains of current thought and practice in real estate and business: environmentalism (with quantitative standards like the U.S. Green Building Council's LEED); energy conservation (with quantitative standards like EPA's Energy Star); health-promoting real estate (with quantitative standards like the Delos Well Building Standard); real estate tech; civic tech; and big data.

Examples of Smart City technologies have also been introduced in Milton Keynes,<sup>4</sup> Southampton,<sup>5</sup> Amsterdam,<sup>6</sup> Barcelona,<sup>7</sup> and Stockholm.<sup>8</sup>

## CREATING THE ARRAY OF THINGS PROJECT RESOURCES

The National Science Foundation awarded the University of Chicago a \$3.1 million grant for the AoT project. The Chicago Innovation Exchange and Argonne National Laboratory also each invested \$150,000 to fund the pilot project.

Argonne National Laboratory also expended over \$1 million on internal research to develop the platform technology underlying the AoT.

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The City of Chicago is funding the installation of the nodes and will provide electricity to them via the traffic signal poles to which the nodes are being attached.

### MANAGEMENT

Data scientist Charlie Catlett and researchers from the Urban Center for Computation and Data of the Computation Institute, a joint initiative of Argonne National Laboratory and the University of Chicago, lead the AoT project.

Peter Beckman and Rajesh Sankaran of Argonne National Laboratory developed the underlying software and hardware design, known as Waggle, for the nodes.

Product Development Technologies developed the custom enclosure design for the nodes, based on early designs by Douglas Pancoast and Satya Mark Basu of the School of the Art Institute of Chicago.

As noted above, the project is executed in partnership with the City of Chicago.

### GOALS OF THE ARRAY OF THINGS PROJECT

As Charlie Catlett sums up the objective of the Array of Things project, "How can you get the city to be more helpful to people by telling us about itself?"<sup>9</sup>

The AoT will operate as a large-scale infrastructure for capturing data from a wide swath of the City of Chicago, and providing related services for Smart City research, development, education, prototyping and demonstration of both open and proprietary techniques and services.

AoT enables the collection of (1) real-time, instant, location-based data about the city's environment, infrastructure and activity, and (2) time series data over a long period so as to reveal patterns that indicate important long-term trends.

The AoT program thus potentially enables policymakers, real estate developers, researchers, and residents to collaborate on specific actions that will make Chicago, and by extension other cities, a healthier, more efficient, and more livable place. The data will make Chicago a truly Smart City, enabling the city to reduce costs by anticipating and proactively addressing potential problems like urban flooding.

The data AoT collects is open, free and available to the public. The nodes will transmit data to a

secure central database server at Argonne National Laboratory. Data will then be published openly to allow organizations, engineers, scientists, researchers and individuals to study urban environments, develop new analysis tools and applications, and inform urban planners. Raw data will also be posted to the City of Chicago's open data network and Plenario, a web-based portal that supports open data search, exploration and downloads with open datasets from Chicago and around the world.

AoT and the data it collects are generally intended to promote three types of research: (1) the collection and open publication of sensor data about public urban spaces, (2) research in areas such as sensing and infrastructure technologies, and (3) research in software and services.

### PLACING THE ARRAY OF THINGS NODES

The City of Chicago will mount a total of 500 nodes on streetlight traffic signal poles around the city by the end of 2018. The city began to install the nodes in summer 2016. The AoT team is collaborating with several City of Chicago partners, including the Department of Information and Technology and Department of Transportation, as well as researchers, neighborhood groups and community members, to determine the best location of nodes for the development of AoT.

The AoT team has mounted an impressive campaign of public involvement and education in the relevant parts of Chicago. Any individual or group may propose node locations.<sup>10</sup>

The locations selected for AoT nodes will maximize the positive impact that city residents, policy practitioners, and scientists can obtain from the project, and must satisfy at least two of the following three criteria:<sup>11</sup>

- a. Nodes can provide data relevant to a local concern or issue of importance to the residents and businesses.
- b. A relevant scientific research question may be better investigated with data from the nodes.
- c. A planned or potential policy or instrument that could be optimized, measured, or informed based on use of data from the nodes, and/or from scientific analysis of that data.

## Raising the IQ of Smart Cities: Chicago's 'Array of Things' Urban Data Device

### CONTENT OF ARRAY OF THINGS NODES<sup>12</sup>

Each node contains five components, with subcomponents as described.

The first two components govern the overall functioning of the AoT network and the internal functioning of the given node itself:

1. A Linux node controller, with (a) an image processing computer, (b) a system health manager, and (c) a control and communications computer; and
2. A node power manager, with (a) a node health monitor, and (b) resilience factors.

The next three components are the true operational sensors:

3. Environmental Services sensors: for air temperature (note that surface temperature is measured by the infrared sensor; see below), humidity, barometric pressure, vibration (to detect heavy traffic), ambient sound intensity, and a magnetometer;
4. Air quality services sensors: for nitrogen dioxide ( $\text{NO}_2$ ), ozone ( $\text{O}_3$ ), carbon monoxide (CO), hydrogen sulfide ( $\text{H}_2\text{S}$ ), and Sulfur dioxide ( $\text{SO}_2$ ) (note that nitrogen dioxide, ground level ozone, carbon monoxide, and sulfur dioxide are four of the six "criteria air pollutants" central under the Clean Air Act; the other two criteria air pollutants are lead and particulate matter; note that hydrogen sulfide is the only compound measured by the air quality services sensors that is NOT a criteria air pollutant); and
5. Light and infrared sensors: light sensor for light intensity, cameras for vehicles and pedestrian traffic (images processed within the note and then discarded), and infrared sensor for cloud cover and surface temperature (note that air temperature is measured by the environmental services sensor; see above).

The node components connect securely to the AoT-dedicated Argonne National Laboratory server, then to Plenario, open data portals, dashboards, and apps.

Continued research and development will help create sensors to monitor other factors of interest such as flooding and standing water, precipitation, wind and pollutants such as lead and particulate matter — Clean Air Act criteria air pollutants — which are not

currently covered.

Some nodes may have expanded capabilities, such as anemometers (to measure wind speed), precise air particle sensors (to measure pollutants like smoke or pollen) and sky-facing images to understand cloud cover and sunlight.

AoT nodes vary in price, depending on their scientific capabilities, from \$500 to \$2000 per node.

### APPLICATIONS OF THE ARRAY OF THINGS

Because the AoT data will be published openly and without charge, it will also support the development of innovative applications, including mobile applications.

Specific potential AoT applications include:

1. Enabling citizens to measure micro-climates in different areas of the city, so that residents can get up-to-date, high-resolution weather and climate information
2. Enabling citizens to track exposure to certain air contaminants
3. Enabling citizens to obtain air quality information block-by-block
4. Enabling citizens to navigate through the city so as to avoid poor air quality
5. Enabling citizens to navigate through the city in order to avoid urban heat islands
6. Enabling citizens to navigate through the city in order to avoid excessive noise
7. Enabling citizens to navigate through the city in order to avoid traffic congestion
8. Enabling planners to time traffic lights during peak traffic periods to improve pedestrian safety and reduce congestion-related pollution
9. Warning citizens to watch out for an icy patch of sidewalk ahead
10. Warning citizens of urban flooding and preparing city services and infrastructure to prevent property damage and illness resulting from flooding
11. Enabling citizens to obtain weather information block-by-block

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12. Enabling planners to determine which areas of the city are heavily populated by pedestrians at different times of the day
13. Telling pedestrians the most populated routes for a late-night walk to the transit station alone
14. Studying the relationship between the urban environment and diseases

Perhaps most importantly, the AoT team expects that many unanticipated, innovative applications will be created by outside parties using the AoT data, realizing the potential of an open, community-based initiative.

### **ARRAY OF THINGS PRIVACY AND RELATED ISSUES**

The purpose of AoT is to monitor the city's environment and activity, not the activity of individuals. The network and node technology and the privacy policy, have been designed specifically to avoid any potential collection of data about individuals, so primary protection is built into the design of the nodes and into the operating policies.

Each sensor in the node that has a potential impact on privacy is operated with specific safeguards in place:

1. The sound sensor in each node only collects data on ambient volume (the level of noise at the node) and will neither record nor transmit raw microphone data;
2. The low-resolution infrared camera in each node is pointed at the road surface and sidewalk with the sole purpose of measuring surface temperature; and
3. The imaging camera in each node detects features such as standing water, weather conditions and sky color (an indicator of pollution), and/or to count the number of pedestrians and various types of vehicles on public streets.

After initial calibration, no images or video will be stored within or transmitted from the nodes. All images are processed into numerical data within the node, after which image data are immediately deleted.

The Technical Security and Planning Group chaired by Von Welch, director of Indiana University's Center for Applied Cybersecurity Research, will review all hardware, software and data being collected by AoT. Operating as an external, independent review team,

the Group will be consulted whenever there is a request for a new kind of data to be collected.

The Array of Things Executive Oversight Council will be co-chaired by the Commissioner of the City of Chicago's Department of Innovation and Technology, Brenna Berman, and by Urban Center for Computation and Data AoT Chair, Charlie Catlett, with additional members selected from academia, industry, nonprofits and the community. No data will be monitored without the approval of the privacy and security external oversight committee, the City of Chicago and the AoT executive committee. In addition, the operation of the Array of Things will be governed by privacy policies that will be published prior to installation of the nodes.

AoT will publicly post, and make fully available online, all policies, hardware and software specifications, design and open source code. Public sensor data will be posted to the City of Chicago's Data Portal.<sup>13</sup> AoT will publish an annual report each year, beginning in June 2017, outlining the achievements of the program, as well as any updates or unintended deviations from the privacy policy.

### **EXPANSION OF ARRAY OF THINGS PROJECT**

AoT currently partners with universities in nine North American and global cities to collect data, including New York City, Seattle, Portland, Atlanta, Mexico City, Newcastle (UK), Bristol (UK) and Amsterdam.<sup>14</sup> By 2017, each of these cities will receive five to ten nodes for use in monitoring local environmental, infrastructure and activity data. Additional U.S. and international cities have expressed interest in partnering with AoT.

The AoT project also involves partnerships with scientists at academic institutions including Northern Illinois University, the University of Illinois at Chicago, the University of Illinois at Champaign-Urbana, DePaul University, Illinois Institute of Technology, Purdue University, University of Notre Dame, Arizona State University, the Santa Fe Institute, University College London, Clemson University and the Institute for Advanced Architecture of Catalonia.<sup>15</sup>

Technical advice and support comes from a growing number of industry partners including Cisco, Microsoft, Schneider Electric, Intel, Motorola Solutions and Zebra Technologies.<sup>16</sup>

## Raising the IQ of Smart Cities: Chicago's 'Array of Things' Urban Data Device

### **IMPLICATIONS OF THE ARRAY OF THINGS FOR THE MAJOR PHASES OF THE REAL ESTATE INDUSTRY**

The AoT project, one of the largest and most sophisticated programs of its kind, has overcome considerable inertia and marshaled remarkable energy. However, the project has limited resources and time, and is currently focused on the deployment of the nodes. It is developing a deep relationship with the real estate industry only gradually, so that the project has not yet set forth the full implications of AoT for the commercial real estate industry.

AoT is making its information available to the general public, including real estate developers and investors. The information is available not just in the aggregate, but from each individual node, which is particularly helpful for specific real estate projects near nodes.

A very preliminary sketch of the implications of AoT for the commercial real estate industry would include the following:

#### **Valuation/Acquisition and Disposition Phases**

AoT potentially renders the valuation, acquisition, and disposition of properties more precise. The information from the nodes about noise, vibration, light, environmental contaminants, vehicle traffic, pedestrian traffic and other factors that influence property and neighborhood value should make appraisals more accurate and reduce re-trading risk.

#### **Entitlements Phase**

AoT may represent the first glimmer of hope for an entitlements process that works better for both the public sector and the private sector.

Cities like Chicago currently collect information in the form of permit applications, certificates of occupancy, inspection results and other relatively episodic means. While the city systematically collects information at the time it issues specific permits and approvals, it generally does not collect such information on a continuous basis.

Moreover, cities and, indeed, multiple levels of government, usually collect information on an agency-by-agency basis. Although there are some good reasons for this, such as agency expertise, the need for real estate developers to work with many agencies is one of the main things that makes the entitlements phase such a time-consuming and

expensive process.

By contrast, the AoT node sensors collect information on an ongoing basis without regard to specific agency — truly a unified, if not fully comprehensive, source of ongoing collection for entitlements-related information.

A potentially fruitful direction to make the AoT nodes more comprehensive is expressly to coordinate the array of sensors provided within them with the different zoning, planning, environmental, and similar laws that embody the entitlements process in Chicago and other cities, and to capture the exact information required by each law, thus facilitating compliance by developers, investors, and other real estate practitioners, while probably also reducing the workload of public employees.

#### **Design Phase**

The information captured by a given node near a new project, and made openly available to the public, would give architects, urban designers and planners information as to temperature, humidity, vibration, noise, light, criteria air pollutants, vehicular traffic, pedestrian traffic and similar variables, from which they could calibrate the design to each specific variable.

#### **Construction Phase**

Some of the information from the nodes, particularly as to humidity, vibration, noise and light, should assist contractors and subcontractors in the construction phase. Possibly some of the node camera sensors could be coordinated with private cameras to record the progress of the construction work.

#### **Operation Phase**

Much of what appears in the entitlements phase applies to the operation phase as well. Deriving information from the nodes on a continuing multimedia basis rather than an episodic agency-by-agency basis should enable both building managers and asset managers to calibrate their building stewardship more effectively, both increasing service level and reducing costs. The nodes may assist in monitoring the ongoing efficacy of environmentally-focused LEED standards, health-focused Well Building standards and similar standards, which have become an increasingly prominent issue.

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### CONCLUSION

Particularly for forward-looking real estate thinker/doers who practice real estate counseling, the Array of Things holds great importance.

As such, real estate counselors will no doubt come to play a considerable part in rolling out the AoT project, and related projects, across the nation and around the world.

And given the strong interest of real estate counselors in real estate data, information and research, they will seize upon the open source nature of the AoT data, and will utilize that data to create advanced buildings, urban design and metropolitan form. ■

### ENDNOTES

1. See *USA Today*, June 24, 2014, "Big Brother? Chicago to measure pedestrians' movements."
2. Ibid.
3. For photograph of node, see <https://arrayofthings.github.io/#>.
4. See "The MK: Smart Project," [www.mksmart.org](http://www.mksmart.org).
5. See Southampton City Council, "Smart Cities card" <https://www.southampton.gov.uk/roads-parking/travel/smartcities-card/>.
6. See Amsterdam Smart City, "Amsterdam Smart City — Projects" <https://amsterdamsmartcity.com/projects>.
7. See Ajuntament de Barcelona, "Barcelona Smart City" <http://ajuntament.barcelona.cat/estrategiadigital/ca>.
8. See City of Stockholm, "The Smart City" <http://international.stockholm.se/city-development/the-smart-city/>.
9. See *USA Today*, June 24, 2014, "Big Brother? Chicago to measure pedestrians' movements."
10. For map of Array of Things Node Locations, see [arrayofthings.github.io/node-locations.html](https://arrayofthings.github.io/node-locations.html).
11. See <https://arrayofthings.github.io/index.html>, Array of Things Governance Policy and Process, Section 4.3: Node.
12. See <https://arrayofthings.github.io/index.html>, (i) homepage, What Is the Array of Things? and (ii) node.html.
13. Data Portal: [data@cityofchicago.org](mailto:data@cityofchicago.org); City of Chicago's Data Portal is <https://data.CityofChicago.org>
14. See <https://arrayofthings.github.io>, "Frequently Asked Questions, What other cities will be using AoT nodes?"
15. See <https://arrayofthings.github.io>, home page, "Who Is the Array of Things Team?"
16. Ibid.

# The Synergetic Smart City Framework — From Idea to Reality

BY VIKTOR WEBER

UNDERLYING GOAL OF THIS ARTICLE IS TO HIGHLIGHT issues in current smart city approaches, find common success factors of established projects and to create a framework based on these findings, which should lay ground for future smart city concepts and research.

There are 31,700,000 results on Google if one searches for the keyword pair 'smart city' and our basic sentiment analysis indicates that the term has a positive connotation.<sup>1,2</sup> This assumption can be fortified by analyzing a sample of 677 tweets, which had an aggregated reach of 2,868,453 and a 99.1 percent non-negative sentiment, consisting of 37.1 percent positive and 62.0 percent neutral sentiment.<sup>3</sup>

It seems that social media has this topic on its agenda, which is proven by 58,087 tweets using the hashtag #smartcity during a 30-day timespan. Compared to 1,322,482 tweets using #justinbieber in the same period of time, it becomes obvious that the smart city is still a niche topic.<sup>4</sup> Academia's interest is attested by more than 30,000 publications, which have the term 'smart city' in their title.<sup>5</sup>

There are numerous smart city projects around the globe and even large scale initiatives, such as the Smart City Challenge from the Indian government or developments from scratch like Songdo City in South Korea.<sup>6,7</sup> Similarly, the European Union is subsidizing smart city projects with its own initiatives.<sup>8</sup> The absolute number of projects is growing and the global smart city market size is predicted to reach \$88.7 billion by 2025, yet there are still few holistic approaches.<sup>9</sup>

So, why is it our envisioned smart city is drastically differing from the projects we have today, and that there is still not a common understanding of a smart city?<sup>10</sup>

## WHAT IS A SMART CITY?

There are multiple approaches for the conceptualization regarding smart cities as well as the definition of such a city or even of smart systems. In order to omit further confusion and to lay ground for a future homogenous

## About the Author



**Viktor Weber** is a pioneering expert and thought leader in technology induced real estate innovation. He is the founder and director of the Future Real Estate Institute, which researches about the impact of technologies such as artificial intelligence, blockchain, robotics and 3-D printing on the built environment and its business processes. He consults corporations regarding innovation strategies, implementation and innovation- & change management. Adding to this, Viktor Weber frequently publishes in international professional publications and is a conference speaker. Currently, among other things, Viktor Weber works on the usage of machine learning for commercial valuation. He is also co-founder of Lean Consultancy, which is specialized in Digital Transformation and Software Development. As Global Shaper of the World Economic Forum Global Shapers Munich he fights for education and integration.

approach, it is deemed reasonable to use a definition aggregating the input of 116 varying definitions.<sup>11</sup>

"A smart sustainable city is an innovative city that uses information and communication technologies and other means to improve quality of life, efficiency of urban operation and services with respect to economic, social, environmental and cultural aspects."<sup>12</sup>

Crucial components of this definition are information and improvement, which can be translated into learning. Unfortunately, smart is often a buzzword, which is used to advertise lighting systems, dash buttons or heat control systems among other similar applications. But in the wake of artificial intelligence, or, more precisely, supervised machine learning models, we have to think about learning when talking about smart. It should not be a static input-output function, but a dynamic, iterating and learning feedback system, which would be truly smart.<sup>13</sup>

Current applications often struggle to fulfill this criterion. Due to this fact, it is necessary to work out common issues in the creation as well as implementation of smart city projects.<sup>14</sup>

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## SMART CITY CHALLENGES & ISSUES

Projects like Masdar City or Songdo City have been developed in a top-down approach which led to acceptance issues.<sup>15</sup> These acceptance issues could be traced back to a lack of transparency, communication and singular control by one entity.<sup>16</sup>

Another challenge for a smart city concept is the adequate usage of data.<sup>17</sup> Due to the massive amount of theoretically available data, its diversity and constant creation within a city, the criteria for big data are often fulfilled, which adds complexity.<sup>18,19</sup> Hence, there are multiple issues related to data, which consist of security, data quality, quantity and scalable processing or the creation of learning systems.<sup>20</sup> Privacy is an issue which severely impacts the acceptance and perception of citizens regarding a smart city project, which makes it a critical balancing act.<sup>21</sup>

The complexity is ever more increased by the financial costs, cross-department communication within cities, the creation of flat hierarchies, technological understanding, measurability of key performance indicators and the need for viable business models underlying each project.<sup>22</sup>

Thus, the following core issues for a smart city project were identified:

- (Big-) Data
- Top-Down Approach
- Focus on Technology
- High Up-Front Investment
- Lack of Citizen Engagement
- Lack of Benefit Measurability

In order to improve future smart city projects, it was deemed reasonable to conceptualise a framework with transparent steps that can counter some of the addressed problems and could potentially lead to more citizen engagement as well as a higher acceptance rate.<sup>23</sup>

## THE SYNERGETIC SMART CITY FRAMEWORK

Based on findings from academic as well as practical literature, the Future Real Estate Institute has conceptualized a preliminary framework for the planning as well as implementation of a smart city concept for already existing cities, which shall pose as a basis for discussion and future research.

The framework was broken down into ideation, research, planning, implementation and measuring (see Figure 1). Adding to this, a dynamic communication — feedback — loop was included in every phase, which should increase citizen engagement, transparency, understanding and long-term acceptance.<sup>23</sup>

The Synergetic Smart City Framework is inspired by the theories of design thinking and the lean startup, which translates into an extended pre-implementation phase and the continuous incorporation of feedback.<sup>24, 25, 26</sup>

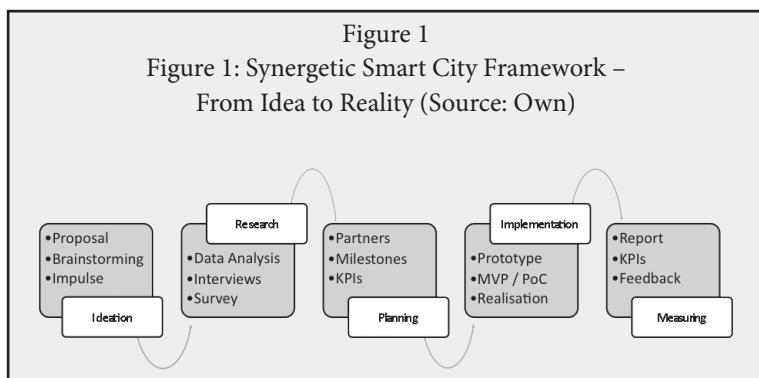
### PHASE 1 — IDEATION

The ideation phase is initiating a smart city project and is the only part of the Synergetic Smart City Framework that is not fully transparent, since the communication — feedback — loop is restricted to impulse — provider and governmental entity.

### Step 1 — Impulse

The first step of the Synergetic Smart City Framework

Figure 1  
Figure 1: Synergetic Smart City Framework –  
From Idea to Reality (Source: Own)



Source: Own

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is the impulse, which has to come either from a governmental entity or an external impulse-provider, such as academia, a startup, a corporation, the civic society or an individual.

## Step 2 — Brainstorming

Similar to a design thinking process, it is advised that the impulse-provider brainstorms together with governmental decision makers about the potential outlines, goals, resources and already existing projects, which would impact the smart city project.<sup>27,28</sup> Already existing ideas from the impulse-provider should be presented and analyzed according to feasibility and practicability.

In this step, current problems and future challenges have to be assessed provisionally, in order to formulate an adequate proposal.

## Step 3 — Proposal

Depending on the legislation, a smart city project has to be tendered or funding has to be secured, which makes an initial proposal necessary.<sup>29</sup> The city's government has to make this step on its own and lay ground for a smart city project by asking for funding or directly issuing a call for proposals.

It should be communicated that any partner has to act according to the Synergetic Smart City Framework, which could ensure transparency and citizen engagement.

After the tender, one individual (entity) should take the lead for the next phase 'Research & Analysis.'

## PHASE 2 — RESEARCH & ANALYSIS

In order to increase granularity, a mixed-method approach is recommended, which can help understand already identified issues, reveal upcoming challenges, stakeholder sentiment and foster ideas for a holistic concept.<sup>30</sup> Preliminary research objectives should be defined, which would translate into the research's scale. Among the research objectives should be to understand what the current 'pains' of the inhabitants are, how they perceive their city, what they understand of a smart city and what they wish for their city's future.

The entire raw data, as well as findings, should be made accessible in an open data platform, which could positively affect acceptance and increase transparency, while providing researchers or interested individuals with appropriate data-sets for

their own research.<sup>31</sup>

## Step 4 — Data Analysis

Before commencing the first interviews, a systematic literature review of academic as well as practical publications should be conducted in order to inform the question guide for the interview and the survey.<sup>32,33</sup> The acquisition of large amounts of relevant textual data could be enhanced by the usage of a web scraping tool, working through relevant databases.<sup>34</sup>

In order to accelerate the process and increase granularity, it might be advised, dependent on the research goals and resources, to automate text analytics, using natural language processing artificial intelligence.<sup>35</sup>

## Step 5 — Interviews

As part of a qualitative, grounded theory approach it is advised to conduct semi-structured, one-to-one, indepth expert informant interviews.<sup>36</sup>

The interviews should be conducted with samples of all city stakeholders, which we divide into permanent inhabitants, temporarily inhabitants (commuters, tourists, refugees), employees of the city administration and public utilities, academia, corporations, startup entrepreneurs, politicians and non-governmental organizations. Yet, the sample size and level of saturation is dependent on the scale of the project.

## Step 6 — Survey & Report

Based on the findings from data analysis, as well as interviews, a survey should be designed. Depending on the project's scale and previous findings, it could be adequate to use Likert scales as well as open-ended questions.<sup>37</sup> The survey should be conducted online as well as offline with a similarly distributed sample as in Step 5, yet with a larger sample size.

The findings should be aggregated and presented in a report and the raw data shared in an open access database similar to databases of New York City or Chicago.<sup>38,39</sup>

## PHASE 3 — PLANNING

Based on the research, objectives should be formulated and transparently communicated. We propose an open approach, which would share the planning process in real time with the city's

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inhabitants via the city's website and/or app, which should also aggregate all other services in one application. Using such a transparent approach, citizens could directly comment on the planning process or vote for/down certain proposals, which could accelerate the process, foster engagement, reduce resentments and increase understanding.<sup>40</sup>

## **Step 7 — Key Performance Indicators (KPIs)**

KPIs have to be set according to the varying objectives, yet could also be adopted from standards such as ISO 37120:2014 or based on the Gross Social Feel-Good index as proposed by Hara et al (2016).<sup>41, 42</sup> Adding to result oriented KPIs, as with the previously mentioned metrics, it is important to measure the interest, engagement, sentiment and acceptance during the entire ideation, planning and implementation process, which requires a different, individual set of KPIs.

## **Step 8 — Milestones**

Each objective has to be broken down into feasible milestones, which can be measured and calculated. The sentiment measurements during the planning process indicate how to break down the long-term objective. Thereby, the project would not overwhelm the city's stakeholders, but allow time for adaptation, trials and constructive feedback.

## **Step 9 — Partnerships**

Concomitant, it is vital to build strong partnerships between the city's stakeholders and to find suitable external partners that are capable of realizing the project's milestones.<sup>43</sup> Depending on the legislation, calls for offers and a bid process could be required, similar to Step 3.

## **PHASE 4 — IMPLEMENTATION**

The first significant milestone should be the creation of a centralized communication tool about the smart city project. This should be a website, which includes the city's previous web-services, an open innovation tool where citizen can post their ideas and vote, an open data library and our proposed open planning tool.<sup>44</sup>

## **Step 10 — Prototyping**

Since one critical issue of smart city projects is cost, it is recommended to include a prototyping stage into the implementation phase.<sup>45</sup> A prototype could be digital mock-up, a presentation, demo-video or a virtual reality experience, which would foster

feedback, test for feasibility and create a first proof of concept.

Depending on virtual reality solutions availability, adequate data, intelligent simulation models and budget, the various milestones of the holistic concept could be tested within a virtual reality environment.<sup>46</sup>

## **Step 11 — Minimum Viable Product & Proof of Concept**

A minimum viable product (MVP) could be the basic implementation of a first milestone for a partial plan that should produce real-life data on usage, interaction and create a proof of concept.<sup>47</sup>

In case of the smart city project website, the MVP could be the open planning tool, which could be added to the regular website with basic functionalities and advertised in the local media in order to measure interest and engagement.

Test results should be measured and shared with the public, which would enhance the learning curve of other smart city projects as well as the quality of academic research.<sup>48</sup>

## **Step 12 — Realization & Scaling**

If the proof of concept was positive and the generated feedback analyzed, the scaling stage within the implementation phase should commence. Scaling should be based on inhabitants' preferences, which could be expressed in a voting process. This would increase acceptance, since it is evident that large parts of society do not have a clear vision regarding a smart city and see technological penetration in a city skeptically.<sup>49</sup>

The realization of milestones is always dependent on generated data and feedback, which might make it necessary to go back to previous phases/steps of the Synergetic Smart City Framework.

## **PHASE 5 — MEASUREMENT**

Measurement should include e-service analytics, sensory data from connected devices, analysis of feedback, relevant city data from the socio-and eco-sphere as well as economic data.<sup>50, 51, 52</sup> It is vital to measure sentiment of the city's inhabitants in order to see if there are issues arising which could then be addressed.<sup>53</sup>

Due to the fact, that the communication — feedback — loop is part of every step, measurement in Phase 5

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rather describes the final results after a long period of iteration and multiple learning cycles.

## Step 13 — Key Performance Indicators

Measurability of key performance indicators and comparability against other projects are an important aspect of constructive feedback and learning, which is why it is advised to incorporate a standardized documentation, tracking and measuring system. Adding to individually designed metrics, it seems reasonable to use the standardized 'Indicators for City Services and Quality of Life' — ISO 37120:2014, which enhances comparability between cities and smart city projects.<sup>54</sup> These ISO standards help to quantify, in a standardized manner, parameters addressing the economy, education, telecommunication and governance as well as other major components influencing the quality of life and sustainability in a city. Step 13 can be seen as a more diligent, in-depth analysis, compared to the constant measurements as described in Step 7.

## Step 14 — Feedback

Even though the Synergetic Smart City Framework uses feedback at every step, a concluding feedback phase should be included in order to aggregate and analyze the entire project laying ground for future projects and knowledge-creation.

## Step 15 — Report

Crucial for the process is to summarize the data, findings, feedback and results, which should be communicated in an understandable report. The city's stakeholder should be able to comprehend what the project has done for them by elaborating the cost vs. profit structure as well as non-monetary benefits.

Each report should be written as a case study in order to enhance learning for future smart city projects.

## CONCLUSION & RECOMMENDATION

Cities are complex systems, which make an implementation process of a new concept highly complicated and its success likelihood dependent on multiple parameters, which are not fully understood.<sup>55, 56</sup> Yet there are certain known covariates such as stakeholder involvement, resource availability, implementation in a holistic approach, transparency, usage of data and strong partners, which is why the Synergetic Smart City Framework has aimed to incorporate each known success factor into the

concept.<sup>57, 58</sup>

By including a large scale research phase with input from all stakeholders, the framework helps to avoid a mere focus on technology, since the ideas, wishes and thoughts of all stakeholders are heard, which will help to increase the acceptance of the project.

Issues such as low citizen involvement and low acceptance could be avoided by extensive feedback from city stakeholders at every step of the Synergetic Smart City Framework.

The reporting phase, combined with the aggregated data from each feedback step, lays ground for data mining, which can help to create inferences for future models and smart city concepts.

One limitation of the model is that the issue regarding adequate investment has to be treated as an external factor, which is still decided in a top-down approach, depending on the city's government, except a smart city project is crowdfunded, which might be an option in the future.

In order to avoid transparency issues, data security breaches and more intense governmental control based on personal data, the Future Real Estate Institute proposes that the entire data flow and analytics be anonymized, encrypted and stored within a distributed database/blockchain.<sup>59</sup> This anonymous 'citizen-print' could be stored using the Ethereum blockchain, which was analyzed in a study regarding the storage of electronic health records.<sup>60</sup>

By pursuing the Synergetic Smart City Framework, with its intrinsic openness, transparency, engagement and data anonymity, it is aimed for an enhanced innovation adaptation, increased learning, fewer resentments and the creation of synergies between all stakeholders.

This approach has to be tested in an implementation process, which would be a goal for future research. Furthermore, it is deemed necessary to collect more standardized data about currently existing smart city projects, including their citizen feedback, which could be used to find more issues as well as success factors. Adding to this, it might be possible to create weights for each success-predictor, quantifying a smart city framework in future research. ■

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# Virtual Technology: The Future Is Now For the Commercial Real Estate Industry

BY JEFFREY D. FISHER, Ph.D., MICHAEL K. LERG, DEMETRIOS M. LOUZIOTIS, JR., CRE

## INTRODUCTION

VIRTUAL TECHNOLOGY (“VT”) IS THE LATEST overnight sensation to hit the market. And like many overnight sensations, it has been around for quite a while. One of the first commercial uses of virtual technology, then referred to as 3-D, was in video games over 30 years ago. However, the growth of virtual technology in the form of virtual reality (“VR”), augmented reality (“AR”) and, the latest evolution, mixed reality (“MR”) have dramatically accelerated over the past few years. Facebook’s purchase of Oculus for \$2 billion in 2014 caused both consumers and investors to take notice of what was considered a fledgling industry up to that point.

The advent of smartphones has been a driving factor of this acceleration. The miniaturization of components needed to put the power of yesterday’s super computer in someone’s pocket has provided the components needed for the hardware to catch up to the capabilities of the software and become more affordable. As a result, a range of industries have begun to develop uses for the technology.

This article will explore the wide range of applications within the commercial real estate industry. The use of VT has the opportunity to transform the way properties are marketed, transacted and analyzed. The technology also provides the possibility of material efficiency gains and expands the definition of what the “market” is for a particular property.

The industry’s use of VT has been limited until now as a result of cost and access. However, cost and accessibility have been dramatically improved over the past 12 to 24 months. It appears the use of VT may be on the verge of the tipping point. If so, not using the technology may put a professional or property at a distinct disadvantage.

For those not familiar with it, a brief primer on the

## About the Authors



**Jeffrey D. Fisher, Ph.D.**, is a founding partner of the Pavonis Group, a boutique investment management firm specializing in real estate and real estate technology investments. He is also a Research and Education Consultant to the National Council of Real Estate Investment Fiduciaries (NCREIF), President of the Homer Hoyt Institute and a Professor

Emeritus of Real Estate at the Indiana University Kelley School of Business.



**Michael K. Lerg** is the CTO of Pix Virtual and has 25 years of experience in the use of Realtime-3-D technologies to expedite design, visualization, simulation and training processes across numerous industries.



**Demetrios M. Louziotis, Jr., CRE** is a founding partner and COO of the Pavonis Group, a boutique investment management firm specializing in real estate and real estate technology investments. He has a range of technology and real estate experience, having previously held management roles with ARGUS Software, Credit Suisse and PricewaterhouseCoopers.

technology and the industry follows. The article then provides an overview of the applications of and benefits to using VT for commercial real estate.

## WHAT IS VIRTUAL TECHNOLOGY?

Virtual technology encompasses VR, AR and MR. VR allows us to not only view, but experience objects and places as if we were actually there. Users virtually enter the digital environment and can make customization decisions in real-time such as interior finishes, furniture and amenities, or even entire buildings.

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The primary goal of VR is to provide the user with an immersive experience that makes them feel as though they are somewhere else, whether it be real or fictional, existing or not. The key word is “immersive.” Some types of VR provide a more immersive experience than others.

Currently there are two main types of VR experiences, Spherical or Cylindrical Panoramic images or videos

(Figure 1), and Realtime-3-D Simulations based on photo-realistic game-engine technology (Figure 2). The former allows the user to look in any direction from a series of predetermined camera locations or along the path of a moving video camera.

Note that Figure 1 is composed of photos of the actual space that have been stitched together. Figure 2 is a screen capture of a Realtime-3-D virtual model

**Figure 1**  
**Panoramic Picture of CBRE LA Headquarters**



**Figure 2**  
**3-D PIX Virtual Tour of CBRE LA Headquarters**



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that allows users to freely navigate through and make changes to the space in the model.

Augmented Reality is what the now discontinued Google Glass used. AR allows users to superimpose data into the real environment, much like a heads-up display. Many are familiar now with AR from the recent viral phenomenon PokéMon Go, achieving more than 100 million downloads in a few weeks. What is evolving now is combination of VR and AR into mixed reality.

Mixed reality is still evolving, but will combine the best of VR and AR into a seamless experience. Currently Microsoft's HoloLens and Magic Leap are the leaders in this space and will initially focus on enterprise applications. Imagine wearing glasses while walking into a mall that allows you to see data overlays and responsive virtual objects that look just as realistic as those in the real world. As you walk through the mall you can change an existing store to a different operator and see the impact on foot traffic and sales for surrounding stores.

While AR may have some applications in commercial real estate, VR is considered to have a broader base of application (i) due to the rapidly declining cost of creating, distributing and viewing VR content, and (ii) that various studies have shown 75 percent of people can't visualize what an empty space can look like when built out or look at 2-D floor plan and develop an accurate 3-D mental image of a building's design. When combined with all of the choices a client has to make regarding finishes, lighting, amenities, furnishings and decorations, the issue becomes compounded exponentially.

Accordingly, the use of virtual technology can bring another layer of efficiency to the commercial real estate industry resulting from savings in both time and cost. In addition, the technology can assist with decision making such that it can help compress transaction cycles, which accelerates revenue.

#### **UNDERSTANDING THE VIRTUAL TECHNOLOGY INDUSTRY**

The iPhone revolutionized the mobile communications market. It set new boundaries on smart phone capabilities, impacted countless global industries and their economies, and rewrote the meaning of being connected to the information, people and the world around us. As rapid as that

market grew, the VR hardware market is expected to grow nearly five times faster than the iPhone in the next three years<sup>1</sup> to be worth \$7 Billion by 2018 and \$150 Billion by 2020.<sup>2</sup> Goldman Sachs estimates the market will be between \$80 billion and \$182 billion by 2025.<sup>3</sup> It is important to understand that all of these growth projects assume unit prices are declining 5 percent to 10 percent per year.

The software side of the industry is more mature than the hardware side. The gaming market overtook the movie industry approximately 20 years ago. Consider that while the movie *Star Wars VIII* (2015) grossed just under \$250 million on its opening weekend, the video game *Call of Duty: Ghosts* (2013) achieved sales of over \$1 billion in its first day in stores. Software costs have dropped dramatically, with the price of the underlying game engines going from millions of dollars to an annual subscription cost of just several thousand dollars.

In terms of hardware, a VR model can now be experienced on a computer, tablet, phone or television. To get the full VR experience a Head Mounted Display ("HMD") is typically used. There are three general categories of HMDs:

- Foldable Smartphone Driven HMDs — Examples include Google Cardboard and Wearality Sky. These are foldable, portable and cost effective (\$8 to \$15) solutions, especially for use at tradeshows, in marketing campaigns and other demonstrations.
- Rigid Smartphone Driven HMDs — Examples include the Samsung Gear VR and the forthcoming Apple VR. These units provide a similar experience to the more expensive units at a fraction of the cost (\$100 vs \$600 to \$800), but are not as portable or disposable as the foldables.
- Computer Driven HMDs — The two top contenders in this category are the Oculus Rift (\$600) and the HTC Vive (\$800). These provide a high-end VR experience, but require a computer with a dedicated graphics processing unit (GPU) which can cost an additional \$1,000 or more. With the required cabling, power supplies and external sensors, these are not as portable as any of the other HMDs, and require setup and calibration.

In short, the delivery capability (hardware) is finally catching up to production capabilities (software)

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and the cost of both is dropping quickly. The variety of Virtual Reality consumer products is greatly accelerating, while prices are dropping and performance is increasing.

#### **CREATING A VIRTUAL ENVIRONMENT**

Creating a virtual, immersive model of a space, building or more starts with physical information about what is to be modeled. For an existing property, a PDF of the floor plan, some photos and measurements would be enough but not ideal, as it would take substantially longer and cost more to produce a model.

If plans are to be used, which is a necessity if a property has yet to be built, a 3-D CAD file or BIM file is the best place to start. If these are not available, other options for “capturing” the space and converting into the required digital format include photography, photogrammetry and LIDAR using special cameras, drones or, for larger areas such as a campus or city, fixed wing aircraft.

Once the capture is complete, engineers and graphic artists work together to create a realistic model that is optimized for size, which is driven by the number of polygons used to create the model. A key factor for optimizing the model is accounting for how the model will be used and distributed. Delivery options aside from a computer or television may include over the web, on mobile devices, through an HMD or on a

touch-screen kiosk.

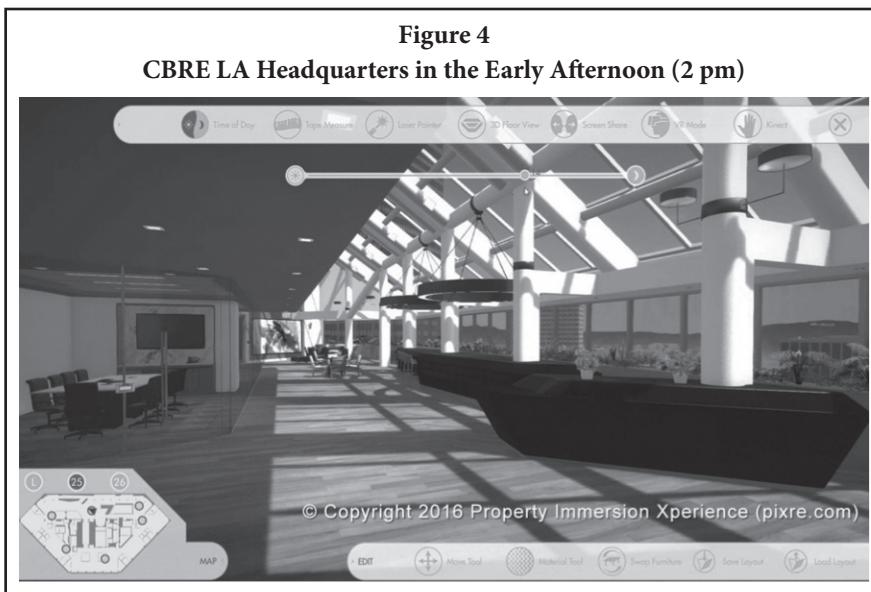
Another factor that needs to be accounted for is what functionality needs to exist in the model. Options include the ability to:

- Dynamically change the environment — moving walls or changing windows, furniture, finishes (e.g., floor covering, wall color, counters, cabinets, etc.). The user can design or customize any space while standing within it virtually today.
- Change the time of day, providing a real-time lighting/shadow study as shown in Figures 3 and 4.
- Take measurements.
- Use a laser pointer.
- View each floor as an isometric illustration (from any angle).
- Use Multi-Player capability to give individuals or groups of people in different locations guided tours.
- Have live interaction with embedded video chat.
- Use hand gestures to control the 3-D scene using a Kinect.
- Embed audio and video or even live TV feeds, which can be used to personalize the space.
- Incorporate data.

**Figure 3**  
**CBRE LA Headquarters in the Early Morning (9 am)**



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Given the variety of potential VR experiences, it is important to focus on the project's objectives and delivery method (type of hardware, web) before choosing a particular VR solution. If the answer to all of the below questions is yes, then Spherical or Cylindrical photo- or video-based panoramic scenes may be your best and lowest cost option.

1. Does the property already exist?
2. Is it photo ready?
3. Is this a short-term or one-time project where you only want to depict the property in its current state?

However, a virtual, immersive model is the better option in the following instances:

- The property does not yet exist or is not yet completed
- There is a desire to start the sales or leasing process prior to completion
- Providing prospective buyers or tenants with the ability to select and depict numerous finishes and amenities is desired
- The market includes remote clients

The ultimate cost of the model is a function of the inputs available (PDF, 3-D CAD, LIDAR capture, etc.), level of realism and detail desired (grayscale to photo-realism, actual furniture and artwork) and types of delivery methods required. In general, the cost of 3-D virtual environments have followed the other industry trends, falling significantly over the last

three to five years. What would have cost a minimum of \$2.00 to \$3.00 per square foot three years ago can now be completed for \$0.50 to \$1.00 per unique square foot. Individual spaces in a building may be as low as \$0.10 to \$0.25 per square foot.

#### **APPLICATIONS AND BENEFITS OF VR TO COMMERCIAL REAL ESTATE**

One of the main uses of VR for real estate is marketing. While the cost of a virtual model may seem high to some, the cost can be offset through the reduction of other marketing spend, a reduction of holding costs by compressing the transaction cycle and accelerating cash flow, which also reduces the risk of closing. The model can also be repurposed for use in facilities, asset and property management. A VR model can save time and money in terms of making design decisions more quickly and avoiding mistakes during the buildup of a space. Similarly, VR models can be used to facilitate and make planning meetings or economic development agency initiatives more accessible and efficient by putting models online to help make real-time changes, by any or all of the stakeholders.

Transaction friction can also be reduced, as potential buyers or tenants can "see" a range of properties without having to travel to each location. Imagine the productivity gains over the course of a year from being able to see ten properties without leaving one's office in the time it would take to drive to and from just one property. The use of a VR model can also expand the market for buyers, as the entire globe

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is now able to see the property. Brokers are able to measure reaction in real-time via embedded audio and video capabilities. This also makes brokers more efficient, as they do not need to coordinate logistics for and host extensive property tours that undoubtedly will include properties that are not given any consideration by the client.

What follows are some specific examples of how VR models can be used that allow the benefits outlined above to be achieved.

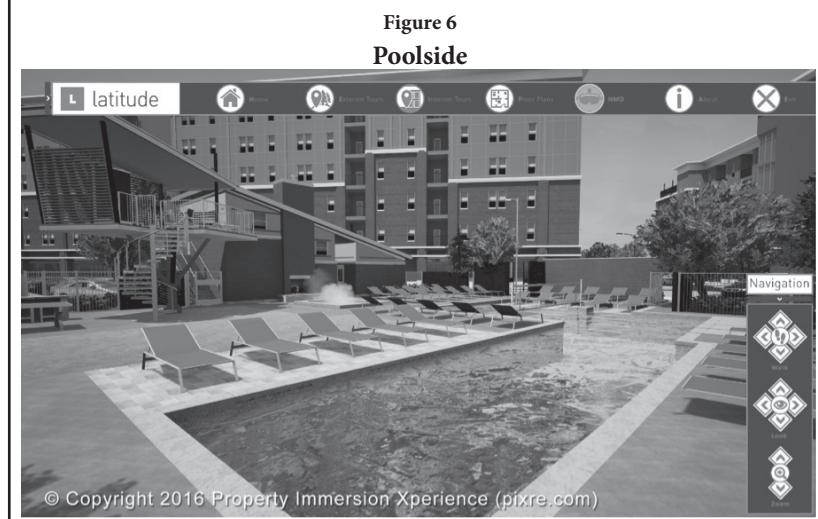
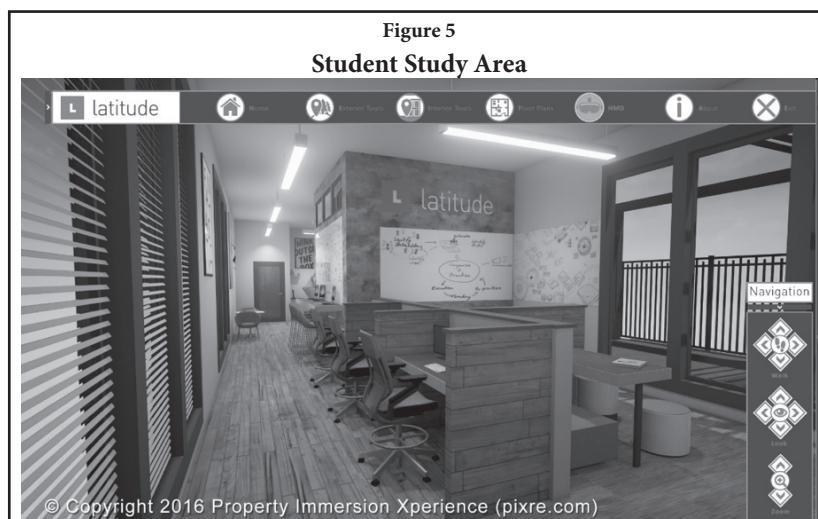
*Developers* — Provide a complete showroom experience to local and remote clients that allows them to select their own finishes, furnishings and other amenities — before ground breaking. Buyers/tenants can instantly see themselves in the space the way they want it, creating the opportunity to shorten sales cycles and sellout periods as well as reduce holding costs. This applies to all types of commercial and residential properties, including student housing,

shown in Figures 5 and 6.

*Investment Sales Brokers* — Show prospective buyers a property without anyone needing to physically be at the property. This will save time and allow the marketing of any property to a global audience.

*Leasing Brokers and Owner/Operators* — Use VR tools to complete test fits of spaces for potential tenants in real-time, online or on site, without the need to wait for an architect. The resulting model can be the foundation for the architects, engineer and other designers. Further, this file could be rapidly upgraded to a fully immersive VR experience since it would be created using the same technology.

*Retailers* — Mall operators or business associations and improvement districts can use VR models to bridge the clicks-to-bricks gap. Online events or games (such as a Halloween scavenger hunt) could be used to provide promotions (coupons, discounts)



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that can only be used in a store.

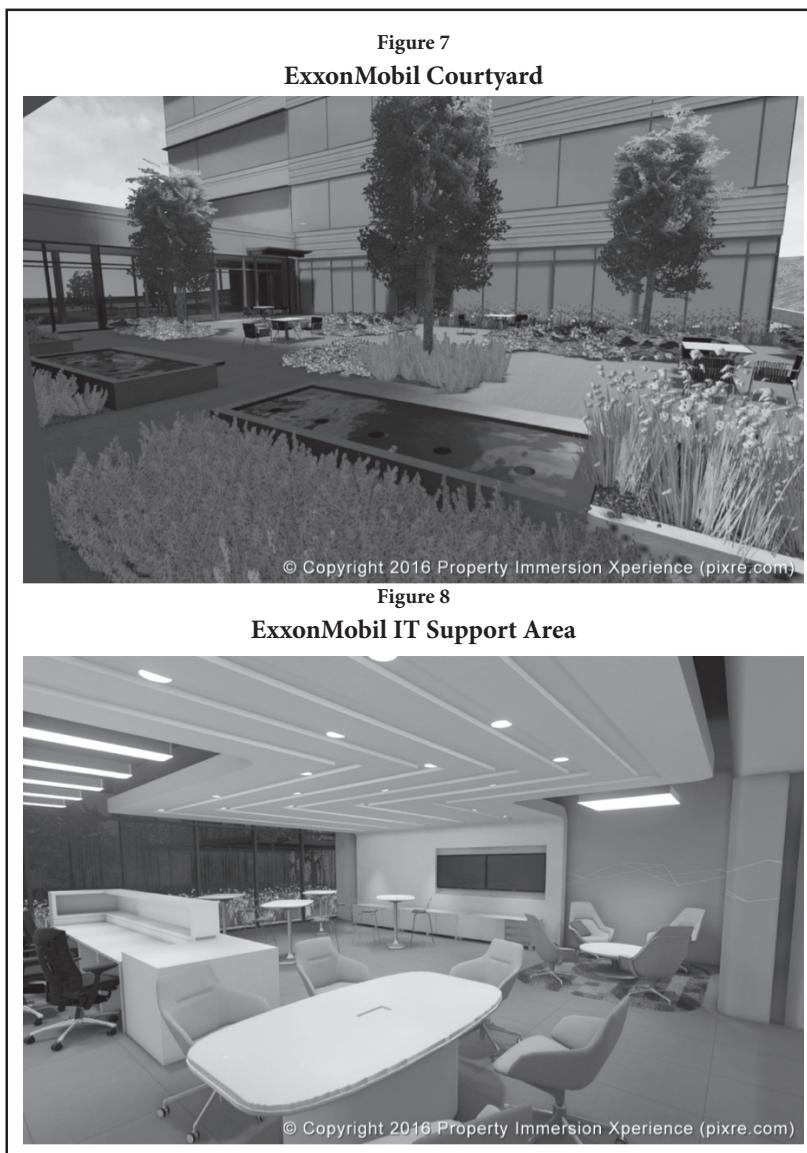
*Property and Asset Management* — Property and space availabilities, occupancies, maintenance requests or records and building operational data can be integrated into the virtual models.

*Hotel Operators* — A virtual model would allow potential guests to experience the rooms and amenities along with views in a way previously not possible. The ability to use data layers, website tracking tools and artificial intelligence provide the opportunity for a major advance in revenue optimization models.

*Construction Management* — Architects, design firms, construction firms and their clients can benefit

from an iterative review of a virtual model, which can expedite the approval process and change order management by all stakeholders. In addition, if an issue arises, all of the stakeholders can instantly be in the space from remote locations to see and better understand the problem, which should allow for a more rapid decision in how to resolve it.

*Corporations* — Figures 7 and 8 are virtual scenes created from the plans and specifications of ExxonMobil's new corporate headquarters. The model was built prior to construction to mitigate change management issues related to their relocation by allowing employees to become familiar with their new work environment before construction was completed.

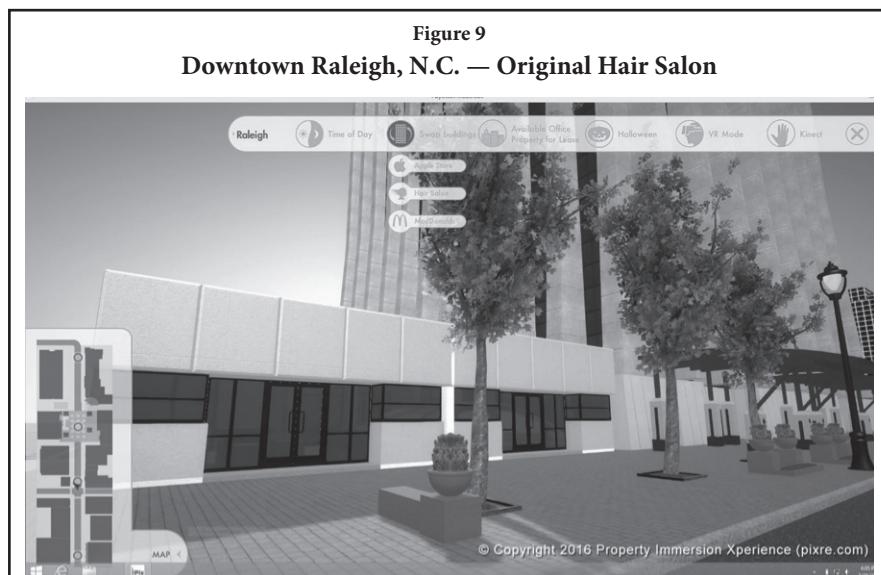


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*Universities* — Campus models can be used for marketing, recruitment, student orientation, alumni outreach, and engagement of students, faculty and graduates. The model could also be used for facilities management and security purposes. In addition, the model could also serve as another avenue of revenue if schools have or plan to have sponsorships.

*Government Agencies* — A virtual neighborhood or city model can be a powerful planning tool that creates efficiency in the review and decision making process as well as a marketing engine and a revenue generator. Enabling data layers and artificial

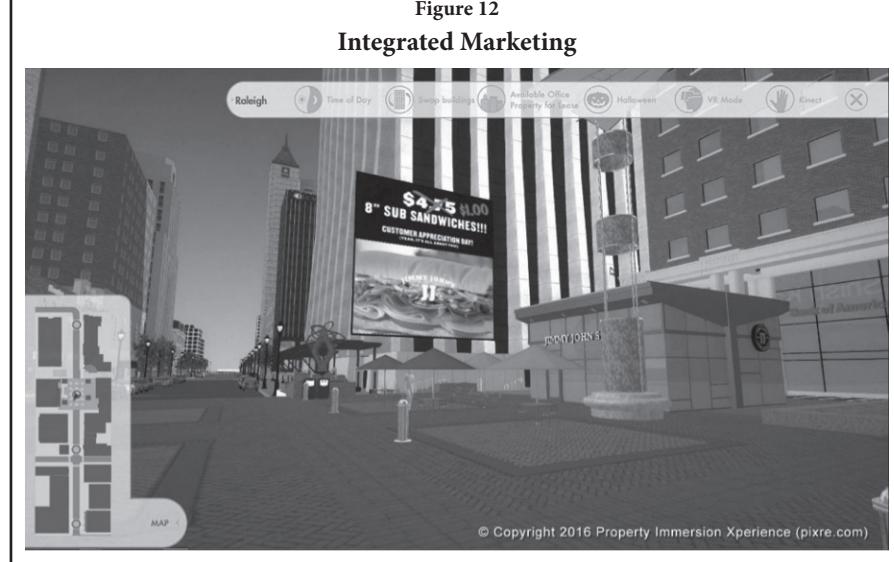
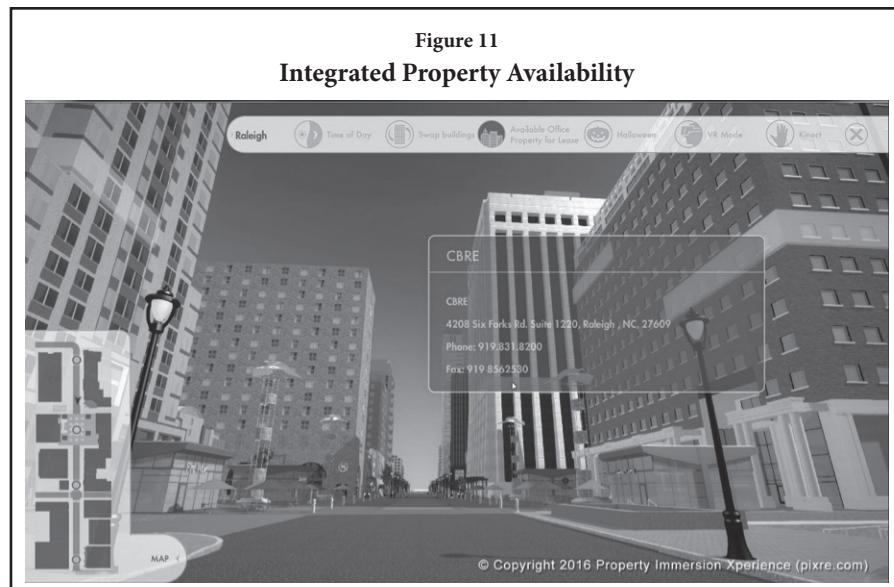
intelligence gives economic development agencies a powerful tool that can accelerate the entire process. Just as furniture can be swapped within a building using VR technology, entire buildings can be swapped to show what they would look like at a particular location where an existing building is to be torn down or renovated. Figure 9 shows an existing hair salon in a location, where Figure 10 shows a McDonald's that is swapped in place of the hair salon. If the property data sets are incorporated, the impact on foot traffic and retail sales can also be simulated.



**Figure 10**  
**Downtown Raleigh, N.C. — Building Swap McDonald's**



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Virtual environments can also be integrated with databases such as information about available properties, as shown in Figure 11. As someone virtually walks through downtown Raleigh, N.C., available spaces are highlighted and details pop up as they approach the building.

Much like campus models and retailers as discussed above, city models can incorporate billboards, pre-recorded or even live video screens that provide advertising opportunities that don't exist elsewhere, as depicted in Figure 12. A more subtle approach can also be taken by using product placements such as having a certain company's vending machines on every corner.

## SUMMARY

The use of VR in commercial real estate is close to the tipping point as result of the cost and technology barriers being greatly reduced. The decline in costs, the ability to reduce costs in the real estate life cycle, the positive impact possible on revenue and the efficiency achievable has made the use of the technology feasible. In fact, the return on investment in some instance can be dramatic.

One of the last barriers is for the industry to gain a better understanding of technology — how it can be used and the benefits that can be derived. As commercial real estate continues to mature as an asset class and must compete for capital against other asset classes, leveraging virtual technologies can help

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reduce transaction costs and risk, operating expenses and inefficiency, while accelerating revenue in a way that could fundamentally improve the asset class in the future.

It may not be long before it will be necessary for many participants in the commercial real estate industry to incorporate VR into their business strategy to remain competitive. Why would any owner want to wait a week or two to have a physical test fit done for a tenant if their competitor is using VR to do them instantly on-site or over the web and can also provide the prospective tenant with a cost estimate to finish and furnish the space? VR will also change the residential market. High-end homes can now be marketed globally and allow potential buyers to tour the property without having to get on a plane, as well as see their renovation vision before any work is started.

Condo developments and subdivisions can also extract tremendous benefit from VR models. Virtual units can be built during the planning/approval process so that pre-sales can begin the moment the plan is approved. The time and cost of building models, furnishing them and holding them out from being sold until the end is eliminated. Other holding costs such as construction loan payments and real estate taxes can be significantly reduced. That means either increased NPVs and IRRs for developers using the technology or those not using it become less competitive and profitable.

VR models can be used throughout the life of a property. They effectively become part of the asset if done well and maintained. A VR model can be used from construction management through the leasing and/or sales process, and it can function as an asset, property and facilities management tool.

The time for VR in the real estate industry is upon us. The cost of model creation and effective, flexible delivery of models has made it affordable and will only get better. The largest barrier is knowledge and awareness of the technology and its capabilities, which is currently compounded by focusing on the cost. In reality, there can be a very positive return on investment of a VR model for even one part of the property lifecycle. Employing VR from the outset of a project will greatly compound that ROI. ■

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*Note: To see the full versions of the images contained in this article, please visit [www.pix-virtual.com](http://www.pix-virtual.com), or read the full article on [www.cre.org](http://www.cre.org).*

# No Brainer: Three Easy Steps To Risk-Free OpEx Reductions and Municipal Asset Valuation Increases

BY JAMES S. OLIN, CRE

THESE DAYS, CITY OFFICIALS, FINANCE OFFICERS AND municipal asset managers everywhere are struggling to come to grips with two unavoidable realities: ever tightening budgetary constraints and aging government buildings badly in need of renovation and upgrade. It's a dilemma that municipalities all over the country wrestle with every day. Government buildings are in desperate need of improvements necessary to simply preserve valuations, let alone increase them, and yet there is often not enough money in the operating budget to do what must be done. Nevertheless, the need to maintain and somehow increase asset valuation is unrelenting, and as municipal governments continually seek to become financially stronger with better credit rating levels, valuation of assets will have a greater and greater impact on the rating indexes for the local government.

So what's the solution? After years, sometimes decades, of grappling with this seemingly intractable predicament, some municipal asset managers have awokened to the fact that it may be over their heads. Literally.

## CREATING VALUE WITHOUT RISK

Because municipal assets are used to collateralize municipal debt obligations, it is important to establish asset values using generally accepted valuation methods for relevant properties. One of the most widespread is the direct capitalization method, which is based on the income that could be generated from rents or other income in relation to the property being valued. That projected income is converted into a capital sum (current value) by the use of a capitalization rate derived from analysis of actual sales in the market. Presently, the national average stabilized cap rate for suburban Class A assets is about 6.5 percent. Thus, an annual income of \$1 million from such an asset would result in a valuation of more

## About the Author



**James S. Olin, CRE**, has been a leader in the vacation rental and resort real estate and development industries since the 1980s.

Jim is currently CEO of C2G Advisors LLC, a strategic consulting firm specializing in all facets of the hospitality industry, with special emphasis on vacation rental and resort activities. Jim was also part of a select negotiations team for one of the largest class action settlements in the history of the United States, and he continues to provide litigation consulting in the areas of hospitality and business economic loss.

Previously, Jim was Managing Partner of The Sterling Companies LLC, and is the former President and CEO of ResortQuest International (NYSE: RZT), the world's largest vacation rental property management and resort real estate firm. Under his leadership at ResortQuest, Jim guided the network of more than 20,000 vacation rental properties in 52 premier resort destinations and developed alliances and partnerships that gave ResortQuest a truly global reach. Jim also oversaw a real estate brokerage network of more than 350 agents, who traditionally managed in excess of \$1 billion in real estate listings.

Jim is a licensed real estate broker in Florida, Alabama, Mississippi and Tennessee, and has been appointed to numerous state-level committees and task forces by previous Florida Governors and Secretaries of Commerce. Jim is a member of both the prestigious Counselors of Real Estate (CRE), and Council of Real Estate Broker Managers (CRB) – he is one of only 8 people currently invited to membership in both organizations simultaneously.

Jim also has certifications from the National Association of Realtors as a Resort and Second Home Property Specialist (RSPS) and a Senior Real Estate Specialist (SRES). He is also a Certified Negotiations Expert (CNE), and a Fellow with the Royal Institution of Chartered Surveyors.

than \$15.4 million.

Asset managers know that one sure way to increase a building's valuation is to decrease its Operating Expenses (OpEx). Most of them also know that implementing strategically selected Energy Efficiency Measures (EEMs) is one of the quickest, most cost

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effective ways to achieve substantial OpEx reductions that will, in turn, dramatically improve valuations. For example, at a cap rate of 6.5 percent, reducing a building's annual energy costs by \$100,000 will result in a \$1.5 million increase in valuation. Happily, such an energy cost reduction is easily achievable for most large office buildings.

Naturally, every asset manager would like to achieve similar or even better results for his properties. But what may not be clear is which EEMs should be implemented, when and in what order. With various measures to choose from, and thousands of vendors vying for the business, choosing the best path to energy efficiency can quickly devolve into an exercise in confusion. Although a random approach will almost certainly result in cost reductions, it is not likely to yield the best outcome. How then, to plan the best way forward?

Fortunately, making the best decision about EEM selection and implementation can be as easy as one, two, three. By following three simple steps, *it can also be risk free.*

### STEP ONE: MEASURE FOR SUCCESS

In order to get to where you want to go you have to know where you are. In the quest for energy efficiency that means obtaining detailed metrics about current energy consumption. Legendary management consultant and business visionary Peter F. Drucker is often quoted as saying, "If you don't measure it, you can't improve it" — or words to that effect. Some of today's managers might beg to differ with that purported Druckerism, but when it comes to energy efficiency it is spot on. Thus, measuring pre-retrofit energy usage — benchmarking — is the indispensable first step for any asset manager who is truly serious about minimizing energy usage and OpEx. As we shall later see, benchmarking is crucial to eliminating performance risk for the EEMs selected as a result of analyzing the collected data.

Benchmarking involves much, much more than simply collecting the information that appears on the energy bills, and the guiding principle is that there is no such thing as too much data. Truly meaningful metering provides asset managers with the data about energy usage that is necessary not only to make informed decisions about which EEMs should be implemented, but also on how best to operate

the building's various mechanical and electrical systems. While utility company meters provide important information about total usage for the billing period — some smart meters are even able to report usage in real time — the data they provide is simply insufficient for the purpose of creating a truly comprehensive energy efficiency strategy. Instead, each one of the target asset's load and consumption points must be measured using sophisticated metering systems, and the resulting data leveraged to provide insightful analytics. It's the only way to take the guesswork out of identifying the EEMs that should be implemented, and in what order, and the only way to monitor and accurately evaluate post-installation results.

As with every task, the right tool is key to metering success. If the objective is to maximize both energy efficiency and asset value, the right tool is an advanced, vertically integrated energy management platform, such as those available from Egotia and Enertiv. Each of these state-of-the-art systems combines a network of meters and submeters with powerful analytical software and a user-friendly dashboard, in order to provide complete transparency about energy usage at every level — from the building all the way down to individual pieces of equipment. Limited only by the number of meters and submeters connected to the system, these systems provide real-time building- and equipment-level data that can be employed to identify opportunities to reduce energy use, decrease operating expenses, improve overall building performance and extend equipment life cycles.

**Tony Smith**, a principal at Egotia, said that metering allows owners and asset managers to build a fact-driven EEM decision tree that can not only identify which measures should be employed, but also which ones will deliver an acceptable return on investment (ROI). "Metering does more than just show you where you can save energy," he said. "It gives you the facts you need in order to determine whether it is more cost effective to replace a piece of equipment that has substantial life cycle remaining; update it with energy-saving controls or other modifications; or just leave it alone and replace it when it finally wears out." (T. Smith, personal communication, October 9, 2016.)

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When initiating a metering program, it is important to bear in mind that an energy management platform is an expense that, in and of itself, does not reduce energy consumption and costs. However, the system is necessary in order to enable asset managers to benchmark building energy usage at a granular level; identify operational efficiency and EEM retrofit opportunities; and accurately quantify the ROI of energy efficiency projects. Knowledge is power — or in the case of electric power, less of it.

Happily, a real-time energy management platform also provides other valuable and on-going benefits, including the following benefits identified in a report prepared for the U.S. Department of Energy:<sup>1</sup>

- Verification of utility bills
- Comparison of utility rates
- Proper allocation of costs
- Demand response or load shedding when purchasing electricity under time-based rates
- Usage reporting and tracking in support of establishing and monitoring utility budgets and costs, and in developing annual energy reports
- Prolonging equipment life (and reducing capital investment requirements) and improving its reliability by verifying the efficient operation of equipment
- Assessing the impact of utility price fluctuations prior to or as they happen, allowing sites/agencies to address budget shortfalls on a proactive basis
- Supporting efforts to attain ENERGY STAR and/or green building certifications

Of the above listed benefits, perhaps none is more important than the last one: ENERGY STAR certification. Earning an ENERGY STAR label has been shown to increase building value, generate greater income compared to similar buildings without ENERGY STAR certification, and increase occupancy rates. And for asset managers who want to lease space to federal tenants, Executive Order 13514 mandates that Federal Agencies may only lease space in buildings with a current ENERGY STAR label.<sup>2</sup> Installing an advanced energy management platform makes maintaining a current ENERGY STAR label a much easier process.

### STEP TWO: PICK THE LOW-HANGING FRUIT

Once the energy management platform has been installed and commissioned, actionable data is quickly available. Usually, it only takes a few days to gather enough data to make informed early decisions, with the objective to identify the low-hanging fruit. These are the energy efficiency improvements that will deliver the most bang for the buck. And the biggest bang for the buck almost always comes upgrading equipment hanging right above every asset manager's head: the lights.

Smith said that installing high-lumen LED lighting, “is a no brainer. It’s almost always the very first energy efficiency measure you should implement. It can decrease OpEx for a large building by hundreds of thousands of dollars per year and add millions of dollars to its valuation, depending on the cap rate.” (*Ibid*) He points to information provided by the Tennessee Valley Authority that shows that lighting accounts for 40 percent of electrical energy use in large office buildings.<sup>3</sup> He said that retrofitting the ubiquitous 4-foot T8 and T8 fluorescent lamps that are typically found in these properties with super-efficient, DLC-approved LED linear retrofit kits, can reduce lighting energy consumption 66 percent or more. Such savings can be found out on the street, too, Smith said. “Retrofitting LEDs in place of the high intensity discharge (HID) lamp types commonly used for outdoor lighting, like streetlights and area lights, will cut usage by a minimum of 50 percent.” Smith explained that, depending on daily usage, ROIs of 30 percent or more are the rule rather than the exception and simple payback periods (SPP) are often less than two years. (*Ibid*)

While a decision to install high efficiency lighting is usually both simple and fiscally sound, decisions about other EEMs can be much more difficult, and in those cases metering becomes much more important. The most obvious areas for improvement are the building’s cooling, heating and ventilation systems. Returning to the TVA data, these uses account for about 28 percent of the annual energy use for a large office building. But the cost for parts, materials and labor to retrofit these systems can easily be up to ten times or more than a lighting retrofit, making financial justifications for their implementation difficult at best.

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For example, Smith said one of Egotia's clients had received a proposal to install EEMs at one of its properties, a 500,000-square foot, 13-building office center in Southeast Tennessee. The EEMs proposed by the vendor included an LED retrofit of all outdoor and indoor lights, and replacement of all existing HVAC equipment with brand new HVAC equipment and digital controls. First, costs of the lighting retrofits were \$430,231 and the projected annual decrease in OpEx was \$227,506. Financial analysis showed that the proposed lighting retrofit would produce a 52.9 percent ROI, a SPP of just 1.9 years, a net present value (NPV) of \$1,021,056 and an increased valuation of \$2.84 million (at an 8 percent cap rate). A total no brainer.

On the other hand, financial analysis of the proposed HVAC retrofits painted a far more dismal picture. First, costs of \$4.10 million were almost 20 times higher than the projected annual OpEx decrease of \$211,538. This resulted in an unacceptably low ROI of just 5.2 percent, a SPP of 19.4 years, and, worst of all, a negative NPV of -\$2.75 million. Clearly, these proposed HVAC retrofits and EEMs could not be justified by financial considerations alone and, needless to say, they were not installed as proposed.

However, there are other justifications for installing EEMs and sometimes they outweigh, or at least offset to a substantial degree, the lack of strong financial justifications. In the example above, the opportunity to increase tenant satisfaction, decrease maintenance cost and — most important — the desire to achieve ENERGY STAR certification in order to lease and continue to lease to Federal Agencies, motivated the owner to move ahead with energy efficiency upgrades to existing HVAC equipment. Egotia was able to show the owner that using metering to create a data-driven decision tree would reduce first costs by nearly \$1 million and still maintain more than 80 percent of the savings projected by the original proposal. "Without the insightful data and deep analytics provided by the energy management platform," Smith said, "the owner might have wound up spending a million bucks he didn't need to spend." (*Ibid*)

### STEP THREE: ELIMINATE RISK

Multi-million dollar energy efficiency projects are typically financed. However, over the last several years, the credit crunch has made it difficult to secure financing, even for municipalities. Financing for

energy efficiency projects has enjoyed marginally more success in the credit markets but has nevertheless been difficult to obtain, despite an increase in demand. To a large degree, banks are reluctant to lend on such projects due to the fact that the loans need to be secured against future OpEx reductions resulting from installation of the energy efficiency measures being financed. If something goes wrong — if the performance of the EEMs has been overestimated or the technologies chosen do not work as expected — then the anticipated savings will almost certainly not be achieved. If that happens, the borrower could default.

There is a way to successfully address this disinclination, said **Tillman Holloway**, president of New Term Energy Assurance, LLC, located in Franklin, Tennessee. "Energy efficiency insurance from NTE eliminates technical uncertainties for both the borrower and the lender," said Holloway. "In layman's terms, that means the borrower is guaranteed to receive the energy efficiency — and the savings — he paid for."

"It also means that the lender is able to concentrate solely on credit risk, free from any concerns about whether the EEMs he is being asked to fund will produce the savings and efficiencies that his customer, the borrower, is expecting."

NTE is one of only two firms in the United States that can underwrite an energy efficiency insurance policy, Holloway said [Ed. Note: The other is Hyland]. Backed by an A.M. Best Company with an A++ Superior rating and available for periods of up to five years, the policies cover any annual shortfall in energy savings compared to the amount of savings insured. "If your policy insures savings of \$100,000 a year and the EEMs that were installed deliver only \$80,000," explains Holloway, "then the policy provides a benefit of \$20,000 to make up for the shortfall." (T. Holloway, personal communication, October 17, 2016.)

Energy efficiency insurance delivers meaningful benefits for all parties involved in an energy efficiency project, from the asset owner, to the company delivering and installing the equipment, to the bank or lender funding the project. For asset owners, it eases the uncertainties surrounding an energy savings project and gives them the confidence to move forward with projects that will reduce

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energy consumption and OpEx. It protects providers of energy efficiency products and services from the risk of underperformance and instills greater customer confidence in their ability to deliver energy efficiency projects that meet or exceed all expectations for financial performance. For banks and lenders, it removes technical uncertainties from the lending decision, improves the creditworthiness of energy efficiency projects and can protect loan repayments. In short, it removes all performance risk from an energy efficiency project.

The United States presently enjoys relative low energy prices. Nevertheless, energy costs account for approximately 30 percent of a building's total operating costs, thus improving energy efficiency pays big dividends now and operates as a hedge against future increases in energy prices. Municipally owned properties, in particular, can benefit from energy

efficiency improvements, because politicians — who must justify their fiscal performance to voters every election cycle — as well as municipal asset managers are both looking for quick solutions to increased asset value. By taking the steps outlined in this article, municipalities can quickly, easily, and *without* risk realize substantial reductions in OpEx, and dramatically increase the value of their properties. ■

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# Social Media Development = Real Estate Development

BY CASEY PIPES, ESQ., CRE, AND KIRK MATTEI, ESQ.

SOCIAL MEDIA HAS COME A LONG WAY IN THE PAST 10 years. What started as an online social network for a college campus quickly moved mainstream. In the early years, social media could be ignored by real estate developers as a place best suited for vacation photo sharing. That has all changed. Today, social media is a constant source of news, information and public commentary. Social media focuses and drives public opinion, and it has become the biggest influencer of traditional news outlets while, almost simultaneously, rendering them less relevant. Like it or not, social media is here to stay, and it is already changing the way we all do business in the land use and development side of the real estate world. If you don't already know what we are talking about, consider this your wake-up call.

Social media is the modern-day battleground for controversial real estate development projects. Social media provides one long public hearing about real estate projects that starts when the first whiff of a project becomes known and continues indefinitely thereafter. The public hearing battles occur daily; the real estate developer is either gaining or losing ground to the opposition forces with each click of the mouse or tap on a smart phone. Public opinion is being formed, shared and communicated constantly.

By better understanding social media, you can greatly enhance your ability to get your real estate project not only approved, but approved with better public support. The public support you generate in the land-use and development process will easily carry over to the post-development phase when the project is being leased, operated or re-sold. An effective social media campaign is now an essential piece of all controversial real estate development projects.

## 21<sup>ST</sup> CENTURY NOT IN MY BACK YARD (NIMBY) OPPOSITION

Social media seems custom made for the grassroots community group (or single person) who is opposed to a real estate project. For real estate developers, it

## About the Authors



**Casey Pipes, Esq., CRE**, is a shareholder and the president of the law firm of Helmsing, Leach, Herlong, Newman & Rouse, P.C. in Mobile, Alabama. A large part of Casey's legal practice has focused on real estate and land valuation litigation and the land use entitlements process. Casey is the past Chairman of American Bar Association Section of Litigation's Condemnation, Zoning, and Land Use Committee and the past Chairman of the American Bar Association Real Property, Trust and Estate Section's Condemnation Committee. Casey has been a member of The Counselors of Real Estate since 2013.



**Kirk Mattei, Esq.**, is an associate at the law firm of Helmsing, Leach, Herlong, Newman & Rouse, P.C. in Mobile, Alabama. Kirk has worked on several different real estate entitlement assignments, in which an active social media campaign was developed and successfully employed. Like most Millennials, Kirk knows more about social media than most people who are age-eligible for inclusion in The Counselors of Real Estate.

is a problem only the internet could create. In the past, a member of the public who is opposed to a project could go speak at a public hearing and then maybe give an interview to a news reporter who is sympathetic to their position. Beyond writing some emails or letters and speaking at a public hearing, this person's opposition would be largely unheard by the public. Now, that same person creates a Facebook page, posts questionably accurate criticisms of the proposed development, uploads a YouTube video of something that was shot on their smartphone, and soon the Facebook page gathers more "likes" than a Kardashian's selfie. The YouTube video goes viral (at a local level). The local media starts reporting because this is looking more and more like news (or at least like controversy). For a total capital investment of around \$0, this single person has set in motion a

## Social Media Development = Real Estate Development

snowball rolling quickly down a steep hill.

Seemingly overnight there is an organized, synchronized, and ever-growing opposition group that already has the ear of the local media and the local political leaders. The opposition can now share talking points, coordinate attendance and speakers at public meetings, petition your potential tenants, threaten boycotts and blast emails daily to all the decision makers. If the real estate developer and his team are still waiting for the planning commission or city council public hearing to make their case for the project, it may be too late. Public and political opinion on the project has already been decided. The developer may have lost the war before realizing that the first battle had already begun.

Yes, there has always been NIMBY opposition to most major real estate developments, but 21<sup>st</sup> Century opposition looks a whole lot different. The NIMBY voice has now been amplified to a level that could never have previously been imagined. Thankfully, the very same social media tools that embolden, facilitate and enable those opposed to real estate developments can also be used, offensively and defensively, by the land use and development team to help secure positive public opinion and public support for a project. Public support is the bedrock for political support, and in some projects and in some communities you need both. Below are some of the ways social media sites can be used as part of a social media campaign during the land use and development entitlement projects by the real estate development team.

**Facebook** — It is 13 years old, and it has over 1.1 billion daily users. What else do you need to know? Facebook is the “go to” and “must use” social media site for building a network, sharing information and influencing public opinion. After creating a Facebook profile, users are able to “friend” other users, post “status updates” and share pictures, videos and any other internet news content. In the context of the land use and development process, Facebook users can share favorable (or unfavorable) news articles and their own opinions, while organizing into groups (favorable or unfavorable) to further spread and share information that helps convey their opinions and gather support for their opinions. It may, in some cases, be beneficial for a developer to create their own Facebook page to push out positive news and accurate

information about their project to help generate positive interest and public support. In a controversial project, however, creating your own page may simply paint a social media target directly on your head. The best approach is likely to monitor Facebook and post corrections and rebuttals to the opposition to help contain and influence the public conversation. Even when public opinion may be largely against a project, a small group of people (or even an individual user) can have a high profile impact by making thoughtful comments and targeted rebuttals to critical posts. Correcting misinformation, giving accurate information and providing a different perspective can help contain a run-away Facebook opposition group. Also, by following along in the public conversation, you will not be surprised by the opposition’s email blasts, organized protests and other activity.

**Twitter** — Launched in 2006, Twitter is a social networking and micro blogging site. Users (including the President of the United States) can send and read “tweets” of information that are limited in size to 140 characters. There are more than 200 million Twitter users who send out more than 400 million tweets per day, and this social media platform is growing faster than just about any other. Twitter provides a faster paced environment for distributing concise messaging. Twitter also allows users to reach beyond their existing “Facebook friends” and existing social media network, which is invaluable when you are trying to reach new people. News reporters and other members of traditional media have also embraced Twitter as both a rapid source for getting scoop and a vehicle for distributing online stories. In the internet era where news reporters value “clicks” more than anything else, Twitter has become a cornerstone of modern media. Because of this, developers can effectively use Twitter as a way to communicate with reporters, quickly distribute press releases, link to other stores and keep up with the media’s narrative around a project. The most basic limitation regarding tweet size is also its greatest asset. Keep it short. Keep it simple. Boil the message down to one bite-size portion. “Great mtg today with mayor & traffic engineers to discuss fixes for downtown traffic problems as part of Blue Sky Apartment Project.” You do not have the space to say much else, and you may not want to say anything else about the meeting anyway!

## Social Media Development = Real Estate Development

**YouTube.com** — YouTube is now the second-largest search engine on the web, and it has only been around since 2006. There are more than 1 billion visitors a month to the site. YouTube is where videos and animated presentations get uploaded for public view to live on indefinitely. If you have a project that calls for any type of animation presentation or video, you need to post it on YouTube. The beauty of this site is that the video does not need to be studio quality. Walk around the dilapidated existing structure with your smart phone to show how bad the status quo of your site is and post it. Post a video or animation of your proposed project in the same place. Post an interview with the developer's architect or engineer. Give people a video image of how your project will fit in with the trees, existing buildings and neighborhood. Share links to your videos via Twitter. To see how this tool is being used now, go to YouTube.com and type "redevelopment" in the search bar and click on whatever looks interesting.

**Change.org** — The online petition site, Change.org, can be a tremendous tool to gather, quantify and communicate public opinion directly to the decision makers. Change.org allows users to create petitions targeting a specific issue with an identified goal. Thousands of petitions have succeeded via Change.org. President Obama granted clemency to a woman serving a life sentence, and the cartoon series Family Guy brought a character back to life in response to online petitions started on this site. Both public and private real estate projects have been killed (or saved) by petitions started on this site. While this tool is better suited to those opposing a project (opposition being a stronger emotion than support), it may be helpful to a developer as a countermeasure. The beauty of the online petition is that you get to state the issue in your terms. While the opposition may start a petition to oppose a project because of traffic (or storm water, parking, etc.), developers may want to start their own petition to the very same people to support the project because of the jobs, tax revenue, or blight created by the status quo. To see how this social media tool is being used today, go to Change.org and type "apartments" or "redevelopment" in the search bar. You may be surprised to see that a project in your own town is already the subject of an online petition!

**Neighborhood sites** — A more recent trend is the proliferation of neighborhood-specific social media. Nextdoor.com, FrontPorchForum.com and Everyblock.com are some of the more popular ones in this category. If your project is in an area of the country with an active neighborhood-specific social media site, you must find a way to join in that conversation. Unlike Facebook where anyone can sign up, in these neighborhood sites only people residing in those neighborhoods are supposed to be part of the conversation. Users are immediately grouped together with all of their neighbors. There is rarely, if ever, an option for a "corporate" account, so you need to identify your supporters in the neighborhood early on and have them keep up with the social media commentary on these sites and keep you in the loop. You must have these same local, credible users push back against negative and misleading posts on these sites.

**NextGreatBigThing.com** — No, this is not another social media site (as of the posting of this article), but it is a reminder that the social media outlets and sites mentioned above have only been around for about 10 years or less. If you are reading this article in print format, then this article is already out of date. There will always be the next big thing in social media. Stay up on the current technology and the current trends where the public is choosing to communicate and interact on social media. Wherever that activity is occurring, that is where you need to be.

### CREATING A SOCIAL MEDIA CAMPAIGN

With these social media tools in mind, the first step to identifying how social media can help you (or not hurt you) in a particular situation is to identify your goals and objectives in close concert with someone who knows more about social media than you do (read, someone younger than you). Dedicate sufficient resources to monitor and track all social media activity. There are tools to help with the broader social media sites such as Hootsuite.com, SproutSocial.com, Trackur.com, Tweetdeck, Buffer.com, Socialmention and others. For neighborhood sites, you need to rely on those in the neighborhood who are aligned with you. Sign up for the tweets and electronic updates from your opposition group. You must always be listening to the social media chatter.

## Social Media Development = Real Estate Development

Someone (or a very small group) should be tasked with actively posting updates and tweets about progress and the benefits of the project on all available and relevant social media platforms. Do not over-review the posts and updates since they need to be rapid and timely. If you tweet about a meeting with the Mayor a day after the opposition group already tweeted about the same meeting, you are in last place. Find out the schedules of the newspaper and TV reporters who are covering the story and be sure to time your tweets and updates around their schedules to help them report your information timely and accurately. Explore and experiment with current and emerging social media to be sure you stay on top of

the trending and popular ways to communicate and engage with the public.

There is an online conversation going on right now concerning just about every real estate project that has at least one person opposed to it (or at least one Millennial opposed to it). If the real estate developer is not contributing to and monitoring the online conversations in real time, then the forces who are opposed to the project can continue to organize, grow and influence others unchecked, to the point where it may be too late. The 21<sup>st</sup> Century “public hearing” is taking place right now, online, and it is time for the developer to speak. Speak up! ■

# The Cognitive Computing Revolution

BY PETER SHANNON, CRE

ROBOTS ARE NO LONGER A FANTASY FROM A SCIENCE fiction movie. Forms of cognitive computing have become part of every day professional life — and are increasingly visible. “Hubo,” the World Economic Forum’s first robot delegate, debuted in January 2016. Six of IBM’s “Watson” cognitive supercomputers work in the healthcare industry, giving healthcare professionals fast answers to complex medical questions. Beyond these high-profile robots, artificial intelligence has come to more ordinary businesses, too. Companies like Lowe’s and Aloft Hotels are testing helpful robot prototypes. Limited-function robots are being used in factories and warehouses. Is your office the next frontier for a robot revolution?

The answer is a resounding “yes.” In fact, robots are already at work in the modern office. Many workers are accustomed to having a quiet, unobtrusive virtual assistant that generates appointment reminders, designates email as “junk” or “not junk,” or even adjusts the workspace temperature to a Goldilocks-like “just right.” The virtual assistant is, in fact, a “cognitive computing” program — a virtual close cousin to the robots that science fiction once predicted would take over our world.

## WHAT IS COGNITIVE COMPUTING?

A subset of artificial intelligence, cognitive computing is the technology behind the email filters that learn the user’s preferences, the “inspired by your browsing history” displays on Amazon and the song-picking abilities of Pandora, the online music service. In these applications and others, the underlying software automatically learns individual user preferences and responds accordingly as it “gets to know” the consumer. While robots are traditionally physical machines, not just virtual, the technology that allows them to learn and act is the same.

Learning-capable cognitive software, along with other automation technologies, is already shaping

## About the Author



Peter Shannon, CRE, is a Managing Director with JLL and leads the IPS Consulting Group and JLL’s Global Consulting Board. His team of consultants help companies meet the challenges of mergers and acquisitions, identifies innovative workplace solutions, drives organizational change, implements energy and sustainability programs, and engineer the financial optimization of their commercial property. Peter drives cost reduction, process improvement, capital enhancement and overall value elevation of commercial real estate teams.

*Peter brings more than 25 years of experience in real estate and capital program advisory.*

*He has worked on engagements in a wide range of markets and industries, allowing him to provide clients with an informed perspective on national real estate trends and facility leading practices. Recent expertise includes strategic portfolio planning, valuation, business intelligence modeling, master planning, workplace strategies, Six Sigma diagnostics and development of policies and procedures for major, multi-site capital programs.*

*Prior to joining JLL, Peter managed Ernst & Young’s Real Estate Advisory Services practice in the Central region.*

*Peter earned both his MBA and BS degrees in architecture from the University of Illinois. During these years he studied abroad with the Universite Pedagogique d’Architecture in Versailles, France and Chulalongkorn University in Bangkok, Thailand. Peter is a licensed real estate broker and licensed architect in the state of Illinois. He is a member of CoreNet, The Counselors of Real Estate, and the American Institute of Architects, where he served as the chair of its national Corporate Architects and Facility Managers knowledge community.*

both how and where companies choose to operate and how they design environments for productivity. Its disruptive power is shaping new business models and operating strategies, creating both opportunities and challenges for businesses in search of competitive advantage.

For corporate real estate teams, these technologies are inextricably linked to the size and shape of

**TECHNOLOGY AND REAL ESTATE**  
**The Cognitive Computing Revolution**

future strategies for their workplaces and real estate portfolios.

### **ON THE BRINK OF TECHNOLOGICAL REVOLUTION**

Cognitive computing, robotics and automation feature prominently in most projections of the future workplace. In fact, the automated workplace became a major focus of the 2016 World Economic Forum (WEF) at Davos. As described in *The Fourth Industrial Revolution*, the landmark 2016 book by WEF founder and Executive Chairman Klaus Schwab, “We stand on the brink of a technological revolution that will fundamentally alter the way we live, work and relate to one another. In its scale, scope and complexity, the transformation will be unlike anything humankind has experienced before.”<sup>1</sup>

The roots of the Fourth Industrial Revolution lie in the original Industrial Revolution that began with the 1770 invention of steam power and led to the transition from hand production to mechanized production with inventions such as the cotton gin, the steam engine and machine tools. The first Industrial Revolution was a major turning point in human history, on par with the domestication of animals — but its full realization evolved over decades.

The Second Industrial Revolution began around 1870 with large-scale iron and steel production, the invention of electric power and the internal combustion engine, and the enormous expansion of railroads and telegraph lines that accelerated the spread of people and ideas. Then, in the 1970s, the Third Industrial Revolution laid the groundwork for the Fourth by introducing electronics, computing and information technologies that further automated production and enhanced industrialization.

The Third Industrial Revolution introduced key concepts involving artificial intelligence, robotics and automation. The Fourth Industrial Revolution began with the emergence of the internet, connected devices, the Internet of Things (IoT), machine-to-machine communications and machine learning. What makes the Fourth Industrial Revolution distinct from previous eras is both the pace of transformation and the scale of its implications for business strategies and operations.

The migration from the simple digitization of Third Industrial Revolution to the advanced computing now

available is forcing companies to reexamine the way they do business. The Fourth Industrial Revolution will be essentially shaped by cognitive computing and other related technologies — including innovative combinations of artificial intelligence, robotics, 3-D printing, nanotechnology, biotechnology, quantum computing, augmented and virtual reality and more. These interrelated advances are poised to transform how and where work is performed.

### **COMPUTERS THAT CAN LEARN AND THINK**

In the 2020s and beyond, the Hubos and Watsons of the world will certainly become more visible in myriad workplaces — but they are only a small part of the picture. As noted above, today’s robots are just as likely to be virtual, existing in the form of software programs that learn from their interactions with users and machines as computers become ever more intelligent. Their presence is already shaping workplace and corporate real estate, and is expected to continue to do so in both foreseeable and unpredictable ways.

As Schwab’s book points out, the prospect of super-automation inevitably raises the specter of disruption and worker displacement. A 2016 World Economic Forum study predicts a net loss of 5.1 million jobs globally in the next five years as computers displace human workers. Over the next 10 to 20 years, the WEF estimates that 40 to 60 percent of the workforce that is now doing transactional work could be replaced and/or augmented by artificial intelligence, workforce automation and smart cognitive thinking machines.<sup>2</sup>

### **WHERE'S THE JOB LOSS?**

The WEF anticipates the most job losses in office and administrative work, followed by manufacturing and production, with the most job gains to arise in business and financial operations; management; and computer and mathematics fields. Similarly, Gartner Inc. research suggests that software or robots will displace one in three jobs by 2025.<sup>3</sup>

Some estimates are much more conservative — for instance, an Organization for Economic Cooperation and Development (OECD) study found that only 9 percent of workers globally faced a high risk of being replaced by an automaton — but all point to at least some degree of job displacement from automation. OECD’s data shows that workers in the Slovak

## The Cognitive Computing Revolution

Republic, Czech Republic, Italy, Germany and Austria are the most vulnerable.<sup>4</sup>

Robots are already an established presence on many manufacturing floors, where the cost of the robot and its maintenance can be far less than the cost of an employee. More than 260,000 robots are working in U.S. factories, according to data from the Robotics Industry Association, with most working in the automotive, semiconductor and electronics industries.<sup>5</sup>

In the white-collar sector, the financial services industry has been among the first to embrace automation. A Citigroup report estimates that more than 1.8 million U.S. and European bank workers could lose their jobs within ten years.<sup>6</sup>

In some banks, for instance, algorithms already tackle tasks such as vetting banking clients, pricing assets and hedging some orders without human intervention. In equities, electronic trading has decimated the number of salespeople, traders and floor brokers, and has ushered in high-speed trading firms and alternative “dark pool” private exchanges.

Elsewhere, several innovative start-up companies are now offering software robots for auto-correspondence and other office functions. BodyLogicMD, a franchising company for hormone replacement therapy clinics, uses calligraphy robots produced by technology start-up Bond to send patients appointment reminder notes in a physician’s own handwriting. The Grid.io uses an artificial intelligence robot to create customized websites for businesses that are updated with real-time analytics.

Innovators such as Nuance and Pandorabots provide artificial intelligence-driven “virtual agents” that can conduct live text or voice chats with customers to answer questions, suggest services or provide tutorials. Of perhaps greater concern is Automated Insights, a company that uses software to create syndicated earnings stories and sports stories for the *Associated Press* for use in newspapers around the world at an average cost of less than \$8 per story.

### THE NEXT-GENERATION WORKPLACE AND CORPORATE REAL ESTATE PORTFOLIO

On the corporate real estate front, new ways of working, collaborating and generating revenue will undoubtedly render some facilities and locations

obsolete while creating demand for new kinds of workspaces. Companies may need to create specialized work environments for jobs that do not yet exist, in industries that have not yet begun to emerge. Meanwhile the ever-growing role of technology will require companies to make continuous investments in workplace technologies.

### ON THE JOB: ROBOT COWORKERS

Although virtual workers may displace many office workers, a more likely scenario is that virtual or physical robots will work side-by-side with humans in complementary roles. Even the most intelligent software agent or robot cannot duplicate every capability of a human being — and that may always be the case. Although software or physical robots can rapidly apply algorithms to vast amounts of data, quickly search for keywords and phrases (a la Google) and accurately perform physical tasks at lightning speed, humans are vastly superior at visual and language recognition and using creativity, intuition, persuasion and imaginative problem solving.

In some industries, cognitive computing has the potential to free human workers for higher-level analysis, business strategies and customer engagement while cognitive software handles high-speed number-crunching, analytics and data searches. These roles will require the human workers to have decidedly higher business skill levels than previously, and organizations will have a different scale and mix of workers than today.

For example, customer contact centers adopted automation a long time ago, and now require fewer employees for basic services that a computer can handle or enable the customer the ability to self-perform the needed service. Today’s higher-skilled positions require problem-solving ability and business acumen, along with greater social media and online chat skills.

In the office, as well as on the manufacturing floor, next-generation working will involve exponentially more human-to-machine collaboration, as companies tap data science to drive workplace performance and business value. Advanced cognitive technologies will further evolve and become integrated into the workplace to enable new levels of human and business performance.

## The Cognitive Computing Revolution

### **BEYOND RENTS AND FLOORPLATES: DISRUPTING LOCATION DECISION-MAKING**

In addition to changing how work is performed, computing advances are accelerating the pace of innovation. Today, new business models are rapidly taking shape to exploit automation and artificial intelligence, and the use of new technologies is enabling companies to launch new products and services in ever-shorter timelines. Already, the increased velocity of business requires companies to create real estate portfolios that are as nimble as their business strategies.

Recognizing that technology-driven disruption will impact workforce needs across many industries, many — if not most — organizations will need to rethink their real estate with an eye to future business models and talent requirements. Many companies are finding that their current locations no longer provide access to workers with the right skills and aptitude.

To succeed, a company will need a portfolio of operating locations that support business transformation and agility with greater access to target demographics, unique skill sets and industry innovation. Some forward-looking companies already are using cognitive computing itself to guide their real estate decisions beyond their staffing needs, with highly sophisticated, data-driven corporate real estate management strategies. A contemporary business intelligence platform can analyze thousands of portfolio data points in a few minutes — data that previously would have taken a group of people months or years to assemble.

With today's corporate real estate data and insights platforms, a company can consider site selection factors far beyond rents and floorplates. Using detailed data visualizations, a corporate real estate team can combine factors encompassing everything from the political environment and macroeconomic factors to demographics and quality-of-life factors to make real estate decisions that anticipate where their business might go. These factors can be integrated

with portfolio data points, such as rental rates, lease expirations and market trends, to design portfolio strategies around the need for digitally savvy talent with specialized skills and business agility as technological disruption continues.

### **WORKERS, WORK ENVIRONMENTS — AND THE COGNITIVE COMPUTING IMPACT**

Clearly, the cognitive computing revolution means that companies will need a different scale and mix of workers in the future than today, and a different mix of work environments. The change is likely to be felt in different ways by different workplaces in different industries. The reality is that no one can predict exactly what and where the impact of artificial intelligence and cognitive technologies is going to be.

What is evident is that robots, cognitive computing programs and other such technologies will provide new levels of efficiency, enhanced human-to-machine collaboration and new innovative machine-learning capabilities. These abilities will in turn drive business and financial performance. Corporate real estate executives need to consider how their companies will respond to these changes — and how their workplace and portfolio strategies can keep pace with the revolution. ■

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# London After Brexit

BY RICHARD BARKHAM, Ph.D., CRE, DENNIS SCHOENMAKER, Ph.D., AND SIENA CARVER

AS A FORMER IMPERIAL CAPITAL, LONDON HAS HAD global significance for about 300 years, but over the last 30, it has seen particular success. Although its global roles as a financial center and business management hub are generally held up as the key reasons behind its success, there are many more qualities that make London a pre-eminent global city.

For some, the recent Brexit vote was a signal from the rest of the country that London's dominance needs to be kept in check, that the financial industry should not be given preferential treatment or incentives, and other industries and regional centers need to get a larger slice of the investment 'pie.' Seven months on, we are starting to see whether these effects will actually materialize. However, in the long run, the impacts of Brexit will depend less on the immediate effects of economic uncertainty (which is likely to span at least two years whilst negotiations take place<sup>1</sup>), but on the ongoing ability of London to attract and support global business. In this article, we explore what the core strengths of London are, before assessing the current and likely impacts of Brexit in the longer term.

The story of London as a global financial center can be traced back several centuries, but only after the 'Big Bang' of the 1986, did its role in international banking really take off. For instance, between 1981 and 1989, employment in banking, finance and insurance in London increased by 38 percent.<sup>2</sup> This increase is partly attributable to the growing presence of foreign, particularly U.S., banks in London, which has now reached over 250, including Goldman Sachs, and UBS. The foreign-born workforce in London has correspondingly increased to the extent that 36.7 percent of London's population were born abroad,<sup>3</sup> providing a culturally diverse workforce.

Not only is the population culturally diverse, but highly skilled. In London, 56 percent of economically active people have a degree, a figure which rises to an astonishing 77 percent in the borough of

## About the Authors



**Richard Barkham, Ph.D., CRE,** is a specialist in macro and real estate economics. He joined CBRE in 2014 as Executive Director and Global Chief Economist. Prior to taking up his position with CBRE, Richard was a Director of Research for the Grosvenor Group — an international business with circa \$10 billion of capital under management in real estate. He was also a non-Executive Director of Grosvenor Fund Management where he was involved in fund strategy, risk analysis and capital raising. Richard is the author of two books and numerous academic and industry papers. In 2012 he published *Real Estate and Globalisation* (Wiley Blackwell, Oxford), which explains the impact on real estate markets of the rise of emerging markets such as China and Brazil. He has extensive consulting experience and is a Visiting Professor in the Department of Construction and Project Management at the Bartlett School, University College London. He holds a Ph.D. in economics from the University of Reading where he taught, in the Departments of Economics and Land Management between the years of 1987 and 1998.

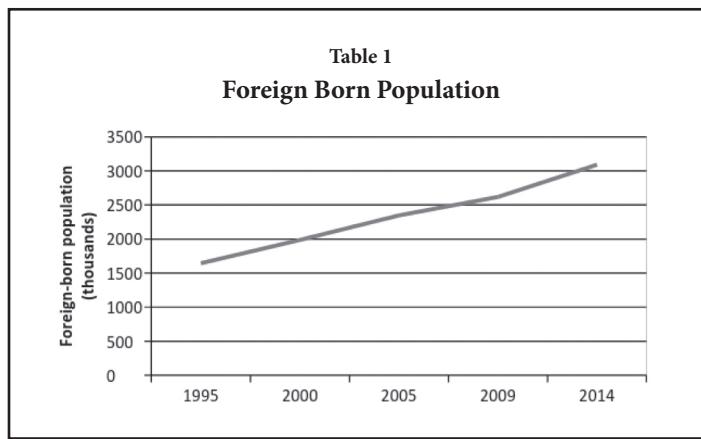


**Dennis Schoenmaker, Ph.D.,** is a Global Economist for CBRE, working together with the Global Chief economist in providing the latest insights on economics and the real estate market. Prior to joining CBRE in July 2015, Dennis earned a Ph.D. at the University of Groningen faculty of Spatial Sciences. During this period, Dennis gained extensive knowledge of property valuation, (commercial) real estate investment and development, and commercial real estate research. Dennis holds a Master degree in Real Estate Studies and Sociology from the University of Groningen. Dennis is a member of the SPR, American Real Estate and Urban Economics Association (AREUA) and American Real Estate Society (ARES).



**Siena Carver** is a Global Research Analyst at CBRE, focusing on the dynamics of the global economy and their relationship with real estate performance. Before CBRE, she worked at Sainsbury's as a Property Graduate, gaining practical experience in Estate Management, Property Investment and Development. Siena is currently undertaking a Real Estate Masters at the University College of Estate Management having completed an undergraduate degree in Geography at the University of Cambridge.

## London After Brexit



Source: Migration Observatory (2014)

Wandsworth.<sup>4</sup> The next most highly qualified city in Europe is Oslo, where 54 percent of the population is qualified to degree level or higher.<sup>5</sup> This is no surprise, given London's ability to attract talent and the fact that London is home to over 60 universities and colleges, of which University College London, Kings College London, Imperial College, and London School of Economics are known internationally as particularly outstanding. Despite this, according to the Institute for Public Policy Research,<sup>6</sup> labor market demand in 2022 for high-skilled jobs in London is expected to outpace supply.

Given that such a large percentage of employment in London is in the services sector (87.9 percent),<sup>7</sup> and 56 percent of vacancies are in occupations that require a degree-level of training or higher, it is hardly surprising that the labor market in London is thirsty for educated individuals.<sup>8</sup> It is encouraging that employment in the FIRE (finance, insurance and real estate) sector as a percentage of the total is below 2007 levels, indicating that London's economy has since rebalanced, specifically towards greater employment in the professional services, real estate and scientific/technical sectors.<sup>9</sup> Creative industries have also flourished around Soho, Shoreditch, King's Cross and Hammersmith, contributing around 16.3 percent of the total jobs in London.

As a tech hub, London has grown in stature, with 23 percent of investors believing that London has the right environment to produce the next technology giant, compared with 10 percent for Berlin.<sup>10</sup> This is supported by research into European technology clusters, which has shown that London has the most to offer compared with its European competitors in terms of employment in this sector, ability to generate

start-ups and new patents, and attractiveness for technology students and graduates.<sup>11</sup> This is especially true for the 'fintech' industry, which has thrived in London thanks in part to the surplus of financially savvy yet unemployed professionals in the capital in the years immediately following the last financial crisis.<sup>12</sup>

Not only is there a variety of industry, but a concentration of top-level management. This is indicated by data from the Global and World Cities network, which places London at the top of the global city connectivity ranking, measuring cities according to the presence and importance of professional services firms' headquarters. According to Deloitte (2014), London hosts 40 percent of the European headquarters of the world's top companies.

London is not only a place to work, but also to play. For off-duty Londoners, there is a vast array of cultural, sporting, leisure and retail options to choose from. The West-End regularly tops international rankings for shopping and the current weakened value of the Sterling has boosted sales for luxury retailers, with Harrods reporting record sales last year. For entertainment, there are over 6,000 restaurants to enjoy, of which 65 are Michelin starred, before an evening at one of the 241 theaters.<sup>13</sup> In terms of sport, there are 14 major venues, including the Queen Elizabeth Olympic Park and Wembley stadium. For those more culturally inclined, there is a choice of 300 museums, of which the British Museum is consistently ranked among the best in the world. Without adopting the tone of a tourist brochure, it would be fair to say that London's wealth is not solely a product of the global ranking of its financial center.

**GLOBAL CITIES**  
**London After Brexit**

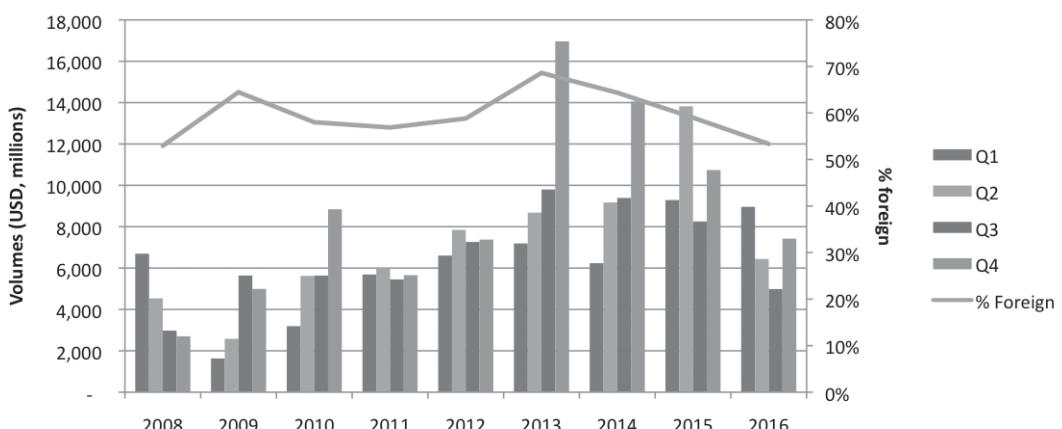
In terms of real estate, London has three core strengths: liquidity, size and transparency. Total investment in 2016 was approaching \$28 billion, of which over 50 percent was accounted for by foreign investors.

As shown below, the lowered relative value of the pound to other currencies has rendered London real estate comparatively attractive in recent months,

which is one explanation for the relatively robust volumes of Asian capital channeled towards London real estate in Q3 last year.

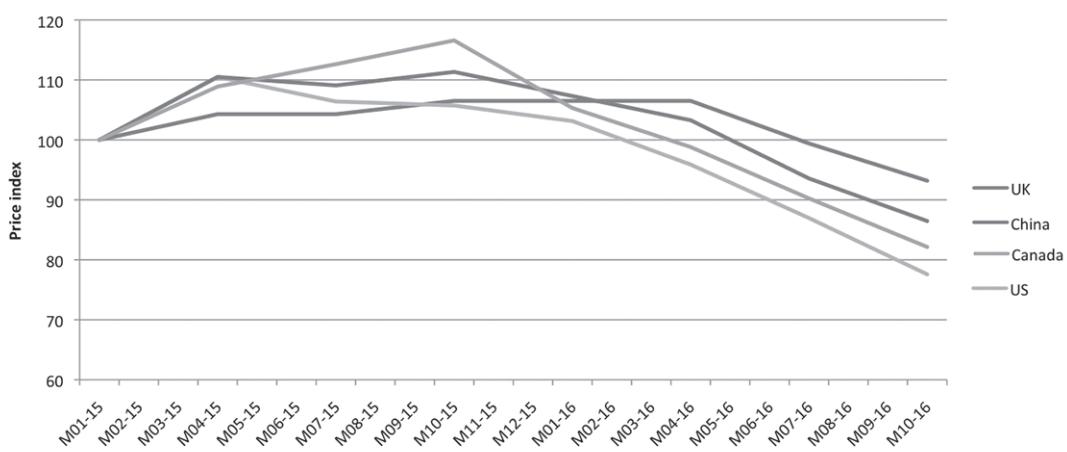
With average returns of 10.8 percent since 2000, and a standard deviation (risk) of 14.5 percent, it is easy to see why London has regularly topped the CBRE EMEA Investor Intentions Survey as a target for investors.

**Table 2**  
**Investment in London Real Estate**



Source: CBRE Research 2016

**Table 3**  
**London Capital Value Price Index in Local Currencies**

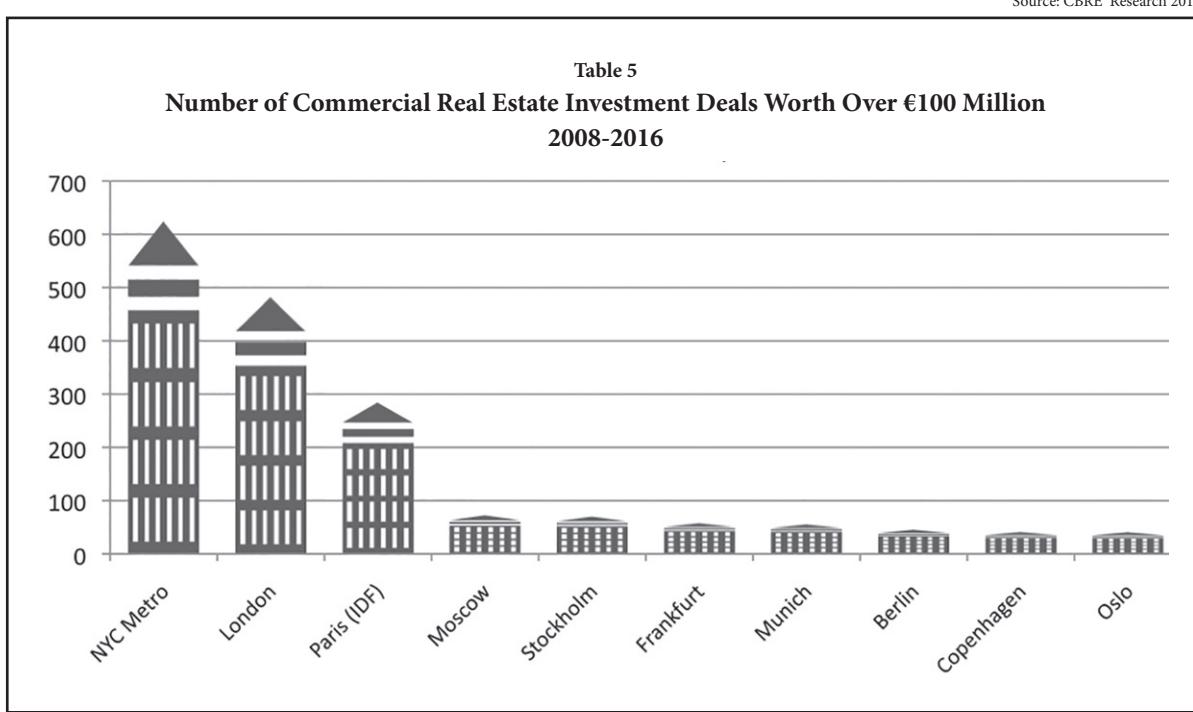
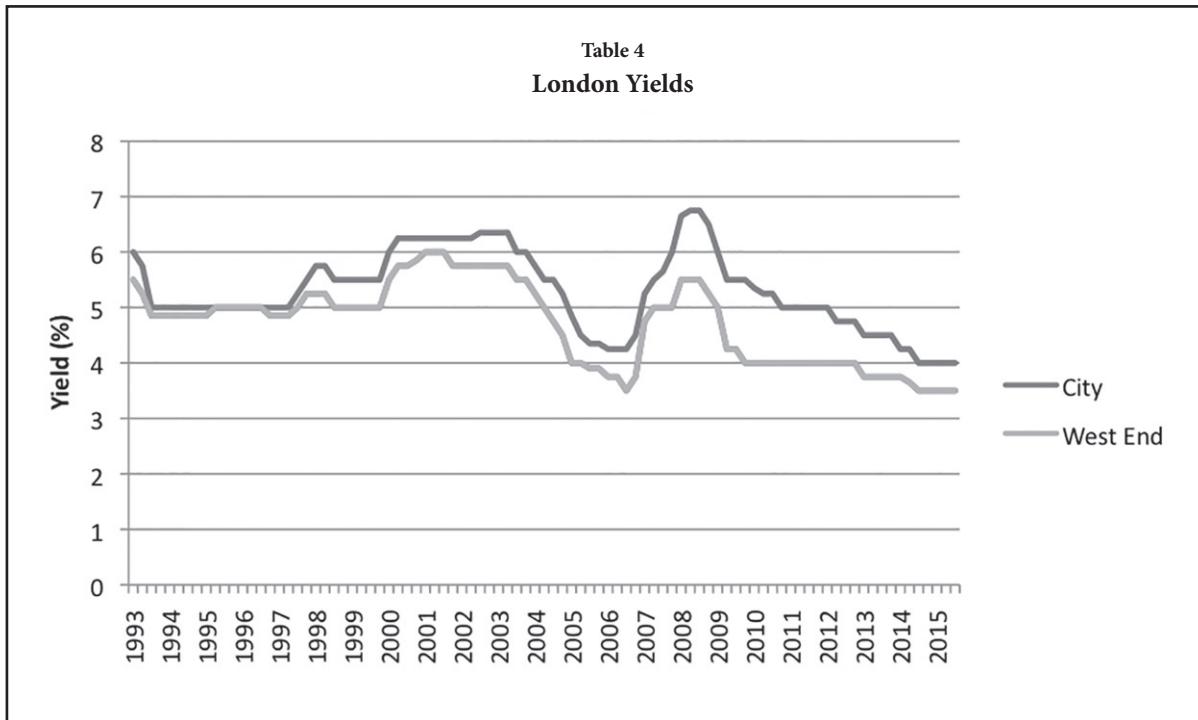


Source: CBRE Research 2016

## London After Brexit

In addition, income returns (i.e. yields) have been fairly stable over time, as shown in the graph below. Despite comparatively weak figures in Q3 this year, there is a long way to go before investment levels, especially cross-border investment, reach a level comparable to any other European city. Part of the reason for this is that London offers a highly liquid

market for large lot-size investments. For this reason, London stands head and shoulders above its European competitors for the number of deals over €100m since 2008 (see chart below). This process is greatly facilitated by a transparent legal system and secure title procedures.



## LONDON POST-BREXIT — WHAT HAS HAPPENED SO FAR?

Pre-Brexit, the general consensus was that leaving the EU would harm London's economy, although the extent of this was debated. This was not unreasonable, as uncertainty across business typically affects investment behavior and the economy as a whole. Now that seven months of data are available, we can start measuring the extent of the impact. Since the vote, UK GDP has increased by 0.6 percent, ahead of the 0.3 percent that analysts predicted. The 'Citi Surprise Index,' which measures the extent to which actual economic indicators exceed expectations or not,<sup>14</sup> also shows that economic performance has been beating expectations. This is reassuring, though it must be remembered that Article 50 has not yet been served and there is still a significant amount of change to come.

So far, the post-Brexit referendum era has indeed been characterized by uncertainty about economic policy. This has translated in the occupier market to a considerable easing in take-up, combined with an uptick in vacancy in Central London offices from 2.3 percent in 2015 to 4.2 percent in January 2017. Of those who have taken space in January 2017, 27 percent were from creative industries, with banking and finance in second place, constituting 24 percent of take-up. Again, this demonstrates that demand for London office space is more diversified than before the 2008 crisis, when 40 percent of take-up of new space came from the banking and finance industry, suggesting there is greater resilience in the market than before.

Market response to the Brexit vote can be measured in terms of active demand for commercial space. Active demand for Central London offices has shown

surprising strength in January 2017, at 7.4m sq. ft., compared to 7.1m sq. ft. in December 2016. It seems that London's fundamental attractiveness as a location for business, as outlined earlier, is capable of sustaining demand in the aftermath of Brexit.

The investment market has seen a less positive response, with transactions at their lowest level since 2011. Since June this year, commercial property capital values not only in Central London, but in New York and San Francisco have declined. This would suggest that the advanced stage in the economic cycle has a role to play as well as the effect of the Brexit vote.

## SCENARIOS

At present, every week has a new twist to offer in terms of political sentiment and where this may leave the UK in a post-Brexit referendum world. However, in general, there seem to be two likely scenarios:

A 'soft' Brexit — this would look something like the Norwegian model (see table below), whereby access to the single market is retained, but the UK would no longer be a member of the EU and would not have a seat on the European Council. Goods and services would be traded with the remaining EU states on a tariff-free basis and financial firms would keep their passporting rights to sell services and operate branches in the EU. Britain would remain within the EU's customs union, meaning that exports would not be subject to border checks. In this scenario it is likely that the UK will continue to make contributions to the EU in return for market access and/or passporting rights.

A 'hard' Brexit — this would involve leaving the single market entirely in order to prioritize

Table 6  
Alternative Brexit Models<sup>15</sup>

	EU membership	Norway	Switzerland	Canada	Turkey	WTO
Single market member	Full	Full	Partial	No	No	No
Tariffs	None	None	None	Reduced tariffs through free trade deal	None on industrial goods	Yes
Acceptable free movement	Yes	Yes	Yes	No	No	No
In the customs union	Yes	No	No	No	Yes	No
Makes EU budget contributions	Yes	Yes	Yes (but smaller than Norway)	No	No	No

## London After Brexit

controlling immigration and have a relationship based — at least initially — on World Trade Organization rules.

While neither outcome is certain at present, Prime Minister Theresa May's recent Conservative Party conference speech was taken by many as favouring a 'hard Brexit'. This would imply the UK losing access to the single market, and accompanying passporting rights for the financial sector in exchange for control over movement of labor. There has, however, been no serious suggestion that EU migrants currently living in the UK will be required to leave.

According to *The Economist* magazine, if a 'hard Brexit' does occur, an estimated 75,000 jobs could be lost from London's financial center, with a third going to the continent, a third to New York, and the rest being lost altogether.<sup>16</sup> This does not bode well for the jobs in professional services, many of which are located outside of London, which form part of the supporting infrastructure for London's financial district. In addition, a tighter immigration policy might be harmful to the tech industry, which relies on easy availability of highly-skilled labor, often from Eastern and Central European regions.<sup>17</sup> However, if London's financial district successfully shifts its focus from servicing EMEA Capital Markets to Emerging Markets, especially those in Asia, this could pave the way towards a renewal of the finance industry following any initial job loss. London has proved itself quite resilient to major political changes over its history!

Construction and development can also be expected to be negatively impacted in the short term. Those developments which have not yet started on site face delays until the level of uncertainty about future demand for space in the economy becomes more certain. In Central London, over 6m. sq. ft. of office developments were completed in 2016, the highest total in over ten years, and a similar level in 2017 — but as less than 3m. sq. ft. is due to complete in 2018 and 2019 has started on site, it is unlikely that we can expect much more than this to come onto the market in these years. The resulting supply restrictions will serve to hold rents up in this period.

For the residential sector, development is more likely to show resilience in the short term for the simple reason that housing in London has been in chronic undersupply over an extended period of time.

Development will also receive a boost from the £2.3 billion Housing Infrastructure Fund, intended to help address this shortage in areas of high demand announced by the Chancellor in this month's Autumn Statement.<sup>18</sup> Longer term, development prospects will depend on the future state of the economy but also on the costs of construction.

In terms of investment, while there is continued uncertainty around the outcome of the Brexit negotiations, investors will continue to act with caution. The extent of this uncertainty effect, however, is highly complex to predict with confidence. As 68 percent of investment into Central London over the past eight quarters was accounted for by international investors, London is, in theory, highly vulnerable to a drop in international confidence. Yet it must be remembered that out of this figure, only 13 percent originated from European investors, indicating that it is their outlook that will have most impact on overall investment volumes. It should also be noted that the biggest source of European money into London was Norway, which is itself not in the EU.

It is worth remembering that there are some 'silver linings' to be found within a 'hard Brexit' cloud. A weaker pound resulting partly as an effect of the uncertain economic climate makes London a more attractive tourist destination, and the boost to retail sales, especially in the luxury sector, has already been felt. With 31.5 million people visiting the capital in 2016,<sup>19</sup> London is already ranked among the very top few tourist destinations in the world, and in the month after Brexit, tourist spending increased by 7 percent. In addition, freedom from certain aspects of the EU's regulatory regime, such as setting a cap on bankers' bonuses, could have the effect of encouraging the industry to stay in the UK.

As to what the broader rebalancing of London's economy could involve, it is clear that London has a series of core strengths that will endure, whatever shape Brexit will take. These include its diverse and skilled employment base, increasingly diversified and entrepreneurial services and tech sectors, leisure possibilities and cultural heritage. For these reasons, even under a 'hard Brexit', a recent article in the *New York Times* comparing European cities as potential new locations for the financial sector found London to be the most attractive. This conclusion was drawn based on an analysis of the regulatory environment,

## London After Brexit

especially regarding employment; transportation and communications infrastructure; availability of prime office space and luxury housing; schools; restaurants, English language facility; and cultural offerings.<sup>21</sup>

According to these measures, the next best city for the financial sector would be Amsterdam, which offers the attractions of culture, communications and good housing stock, but fails to satisfy the need for a relaxed regulatory environment on employment. It seems that there is no ready panacea in Europe for the financial sector to fly to, even with cities falling over each other in a scramble to seduce industry away from London. Most commentators think that a post-Brexit London will have even lighter touch regulation, which is highly attractive to the financial sector.

Ultimately, there are questions over London's continued ability to generate jobs and attractive returns in a post-Brexit economic environment. Whilst Brexit has, and is likely to cause, a short-term 'wobble,' London's key attributes will provide the basis for its resilience in the long-term. ■

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# Housing in Argentina

BY AUGUSTO CAROSI, CRE

IN 2015, ARGENTINA HAD A GROSS DOMESTIC product (GDP) of U.S. \$586 billion.<sup>1</sup> It is the third largest economy in Latin America and among the largest in Emerging Markets.<sup>2</sup> In accordance with the latest census (2010), it has a population of 40 million.

Argentina has abundant natural resources in energy and agriculture. In its territory of 2.8 million square kilometers, it has extraordinary fertile agricultural land and an enormous potential in renewable energy. It is a leading country in the production of foodstuffs, with large-scale industries in the agriculture and livestock sectors. Moreover, it offers great opportunities in some manufacturing sub-sectors, and in the innovating services related to high technology.

The country's economy experienced diverse courses in this contemporary age. We can state that towards the end of the 19<sup>th</sup> century, and the beginning of the 20<sup>th</sup>, Argentina followed an agro-exporting model. According to Angus Maddison,<sup>3</sup> this country, prior to the 30s crisis had a per capita income which placed it in the 11<sup>th</sup> position among the world's countries.

After the 30s crisis, a process of industrialization through import substitution was implemented, with periods of major and minor intervention by the state. Between 1930 and 1986, considerable political instability, caused by a succession of democratic and "de facto" governments, prevented sustained economic growth in the industrialization process and in the planning of state development policies.

With the return of democracy in 1983, there occurred three successive economic crises. The grave national

## About the Author



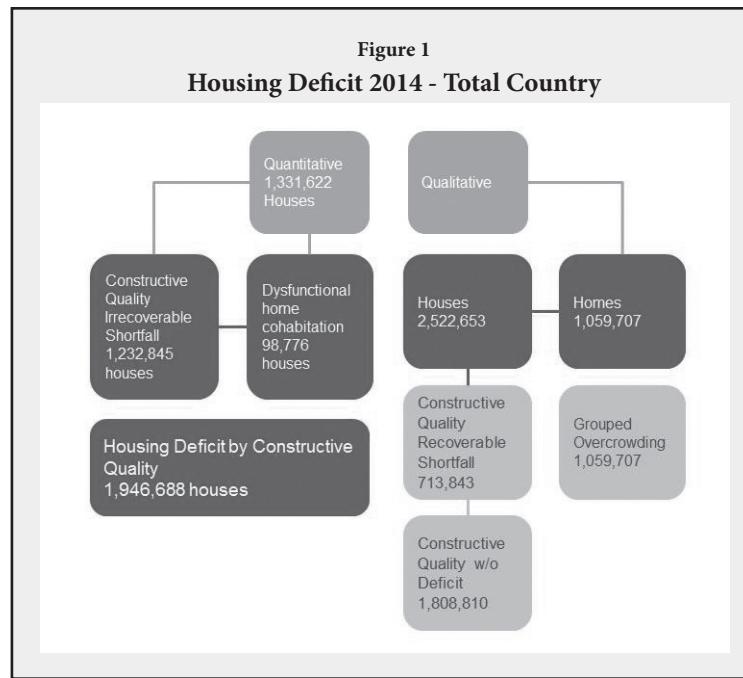
**Augusto Carosi, CRE**, is a founding partner and CEO of Desarrollos Inmobiliarios y Gerenciamiento de Emprendimientos SRL. His experience in the real estate area was developed by his almost 7-year activity in the international company U.S. Equities Realty in Argentina, Chile, Venezuela, Colombia and Panama. His last position held at U.S. Equities was as Managing Director for Latin America, being in charge of leading the company's establishment in the Caribbean region. In 2002, Carosi was put in charge of launching U.S. Equities offices in Santiago de Chile. He oversaw assignments for several clients as Banco Santander-Santiago, ABN AMRO Bank, BankBoston, ENEA and CORFO (Government of Chile). He created the Corporate Services division, including services such as brokerage and project management. He was Project Manager for the U.S. Equities team in Argentina with responsibility for the services and infrastructure managing operations of BankBoston, with more than 120 premises, and 140,000 square meters in the portfolio. Augusto graduated from the University of Buenos Aires as an Industrial Engineer. He can speak fluently Spanish, English and has an intermediate knowledge of French and Portuguese.

crisis of 2001 was followed in 2003 by a populist government, which ruled during the last 12 years until the end of 2015, leaving an economy closed to the world, with 30 percent poverty indexes, and extensive energy and housing deficits.

After this introduction, we will deal with the housing deficit, and the opportunities open to developers in order to reverse the process.

The housing deficit in Argentina, depending on the source consulted and considering all socioeconomic levels, is approximately 2 to 3 million homes.

**GLOBAL CITIES**  
**Housing in Argentina**



**Table 2**  
**Estimated Population Growth Years 2010-2040**

Year	Population	Houses	Ratio	Delta
	Total	Total		
2010	40,788,453	13,835,751	2.9480	
2011	41,261,490	13,996,209	2.9480	160,458
2012	41,733,271	14,156,240	2.9480	160,032
2013	42,202,935	14,315,554	2.9480	159,314
2014	42,669,500	14,473,816	2.9480	158,262
2015	43,131,966	14,630,688	2.9480	156,872
2016	43,590,368	14,786,182	2.9480	155,493
2017	44,044,811	14,940,332	2.9480	154,150
2018	44,494,502	15,092,871	2.9480	152,539
2019	44,938,712	15,243,550	2.9480	150,679
2020	45,376,763	15,392,140	2.9480	148,590
2021	45,808,747	15,538,673	2.9480	146,532
2022	46,234,830	15,683,203	2.9480	144,531
2023	46,654,581	15,825,586	2.9480	142,383
2024	47,067,641	15,965,699	2.9480	140,113
2025	47,473,760	16,103,458	2.9480	137,759
2026	47,873,268	Media	2.9480	151,180
2027	48,266,524			
2028	48,653,385			
2029	49,033,678			
2030	49,407,265			
2031	49,774,276			
2032	50,134,861			
2033	50,488,930			
2034	50,836,373			
2035	51,177,087			
2036	51,511,042			
2037	51,838,245			
2038	52,158,610			
2039	52,472,054			
2040	52,778,477			

**Source** INDEC. Projections and estimations from National population.

**GLOBAL CITIES**  
**Housing in Argentina**

Figure 1 shows a study carried out by the Argentine Chamber of Construction (Cámara Argentina de la Construcción — CAC),<sup>4</sup> where we can see the categorization of housing deficit in Argentina.

If we take in consideration the housing deficit by constructive quality (both irrecoverable and recoverable), we reach about 2 million houses.

The City of Buenos Aires and its suburban areas represent 60 percent of this deficit.

Additionally, it is estimated that demographic growth requires the building of approximately 150,000 homes annually, to keep up with the present housing deficit, as shown in Table 2 *Estimated Population Growth. Years 2010-2040*.<sup>5</sup>

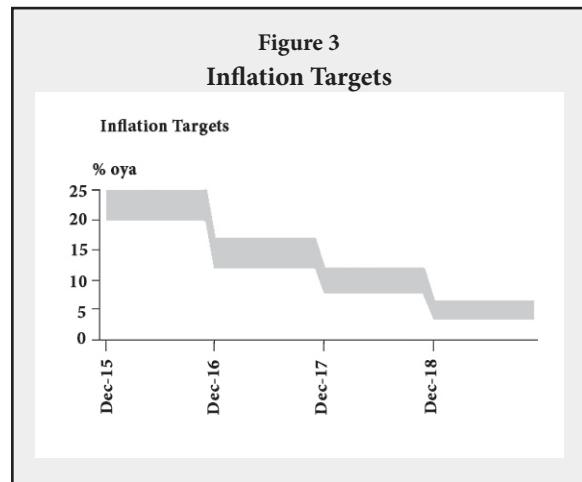
What is the present situation?

Reducing the existing housing deficit is a political decision taken by the present administration.

In order to achieve this, it is imperative that the current inflation rate of 40 percent, reported during the past 12 months, be lowered to a manageable rate below 10 percent per annum.

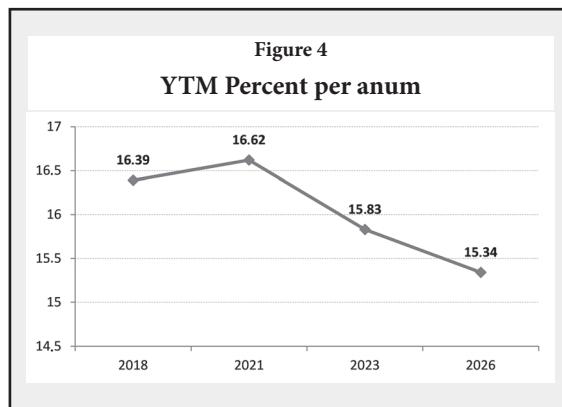
In this sense, the horizon seems to be clearing. The National Institute of Statistics and Censuses (INDEC) ([www.indec.gob.ar](http://www.indec.gob.ar)) published the Greater Buenos Aires region CPI index for August 2016, which rose 0.2 percent m/m, far below July 2016's 2 percent increase.

Looking forward, the annual inflation rate has been forecast at 21.2 percent for 2017,<sup>6</sup> slightly above the inflation target set by the Central Bank of Argentina for 2017 (12-17 percent), but in line with the



Government's plan to lower inflation (see Figure 3).

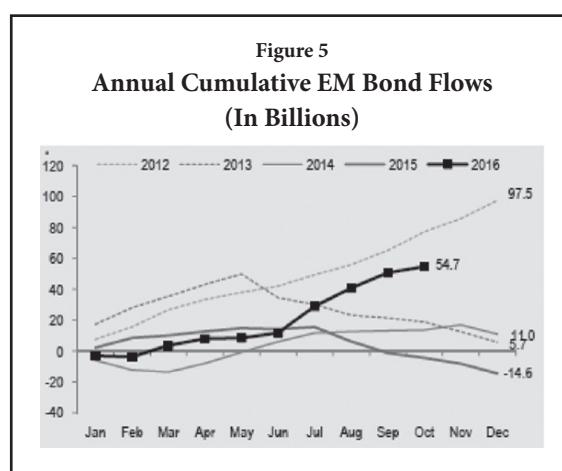
In line with these inflation expectations, the markets have reacted positively to the first offers in years of National Treasury bonds denominated in Argentine Pesos. In the last 60 days, the government has issued bonds worth U.S. \$10 billion with maturities ranging from 2018 to 2026 at decreasing yields, as depicted by the following yield curve for bonds in ARS.



As pointed out by the economist Nicolas Dujovne, “The expected inflation as per the rates of the bonds is close to 17 percent for 2017, and 14 percent to 8 percent in the two following years: That is to say close to 2 percentage points above the target of the Central Bank.”<sup>7</sup>

This is outstanding. If the process were to be continued, we can consider that funds for the building of homes will be available at low rates.

On the other hand, negative rates in the world are nothing new to investment funds. During August 2016, 52 percent of the world's U.S. \$25 trillion



## Housing in Argentina

outstanding bond issues offered a negative rate. For this reason, capital flows are returning to Emerging Markets; 2016 could receive U.S. \$60 billion in new flows after several years of low or even negative flows.

### **MORTGAGE LOANS. STATE-BACKED CREDIT PLANS. “PROCREAR” PROGRAM.**

The relationship between mortgage loans vs. GDP in Argentina was 4 percent towards the end of the 90s, whereas currently it is closer to 0.5 percent. In other countries in the region, the figure is higher. Chile leads with a ratio of 18 percent, and is followed by Brazil and Colombia at 5 percent.<sup>8</sup>

In 2013, in Argentina, one could purchase Treasury Bonds of the Province of Buenos Aires, which yielded an annual rate of return of 24.75 percent in U.S. Dollars. Mind you, this a bond issued by a province. Therefore, what is the rate payable by an individual in order to purchase a home? The rates of indebtedness offered by the Government made the development of a mortgage industry impossible. The result is that in Argentina you either own a home or become a tenant; few have mortgages on their homes.

With the new administration, this began to change. As mentioned previously, the rates at which the government is starting to finance itself in local currency foreshadow a one-digit inflation in the coming years.

Moreover, the government is launching of mortgage credits for the private sector. For example, it recently introduced a program of mortgage credits for housing financed by the National Pension Fund (“Procrear” program — “Own Your Home”).<sup>9</sup>

This plan will allow the financing of homes through State subsidies of up to 20 percent of the total amount of credit granted. Rates of interest would be 5 percent above inflation, with terms not exceeding 20 years.

The maximum value of the loan will be U.S. \$100,000 per home (ARS 1.5 million), and it will be directed towards households with a net annual family income of up to U.S. \$24,000. For example a family with an annual income of U.S. \$13,000 could be granted a U.S. \$60,000 loan; the annual servicing of this loan would be U.S. \$3,200 during a period of 15 years – i.e. a cost/income ratio of 25 percent which is a standard in the industry. Moreover, this U.S. \$60,000 loan plus the State bonus of U.S. \$20,000, would enable the family to purchase a suburban home comprising three rooms

built on a 300 square meter plot of land. While there is no information on housing stock available, the cost to build a house is roughly U.S. \$60,000 (U.S. \$800/sq. m.).

Clearly, the Government is attempting to stimulate the demand-side rather than offer-side. In the past, the government used to build homes for the poor, and resources were going to build homes (the offer-side of the market). Now, the government is giving the funds that used to go towards building homes directly to the individuals so they can decide where they want to buy their home. The offer-side is a reversal of the policies of former governments where bids were made for large housing projects, with higher costs, and where the construction firms profited by non-compliance of completion terms, quality, and without taking into consideration the needs of the final beneficiary.

This is designed to limit speculation and prevent the risk of a housing bubble during the coming 15 years — the estimated time it will take for the deficit to disappear. This is different from other markets (like the American post sub-prime, or the Spanish soft credits for 2<sup>nd</sup> and 3<sup>rd</sup> homes). Why? Merely because whoever purchases this type of home will be the final user. He will be the inhabitant. In the case of investors, it will not be a product for resale at a profit during a short period of time, for those looking for making a quick profit.

With a rate of inflation of less than 10 percent, the financial system will again be able to offer mortgage loans, such as 20 years ago, when one of every two homes sold in the City of Buenos Aires was purchased by way of a bank mortgage.

This way we will enter a virtual circle wherein private developers will compete by way of offering the best cost/quality product, and the buyer will be offered a choice.

The chain of corruption, whereby the state was overcharged for low quality work, would cease, and greater efficiency would be achieved because private capital is profit-conscious and must compete.

The market that unfolds at this new stage falls within the sector of those households that rent, are not overcrowded, and pay monthly rents of U.S. \$266 to U.S. \$400. The suburban homes within this market are valued at U.S. \$100,000.

As we can see in Table 6 above, considering that both

# Housing in Argentina

**Table 6**  
**Homes Consumption. Purpose of expenditures. Owners & Tenants. Greater**  
**Buenos Aires Region**  
**2012-2013**

Purpose of expenditure	Housing Tenure Regime		
	Total	Tenant	Owner
Average net monthly expenditure per household	Arg \$ 5,984	Arg \$ 7,230	Arg \$ 5,965
Average net monthly expenditure per capita	1,892	2,450	1,773
Average net monthly Income per household	7,091	7,421	7,015
Average net monthly Income per capita	2,241	2,514	2,183
	% of expenditure	% of expenditure	% of expenditure
Property, gas, water & electricity (as % of expenditure)	10.9	27.5	5.9
Property (rent and common expenses)	7.3	26.1	1.8
Repairs	1.8	0.2	2.3
Services (water and other related)	0.2	0.2	0.2
Services (electricity, gas & other)	1.5	1.0	1.6

Source: INDEC. ENGH 2012/2013

groups (tenants and owners) could pay common expenses, we can assume 24 percent of tenants' expenditures are going toward rent.

In targeted families with a monthly income of ARS 25,000 (U.S. \$1,666), monthly rent is about ARS 6,000 (U.S. \$400). These families will be able to pay a mortgage for a ARS 1,500,000 (U.S. \$100,000) home — at the same cost as they would to rent a home.

## WHAT HAS CHANGED?

The great change lies in the fact that a family wanting a home of this description had to pay a monthly mortgage of U.S. \$667 to U.S. \$800, due to the combination of high interest-short term mortgages, whereas a rental contract for a similar home, on a monthly basis, was found to be 50 percent less. For this very reason, people were unable to purchase a home on credit. Nowadays rental contracts and mortgage payments have started to even-out. This is the great difference, and it enables a large sector of the population to be homeowners.

## ARE THERE SUFFICIENT HOMES TO COVER THIS DEFICIT?

Definitely not. In recent years all home development concentrated on the building of apartments and

gated communities for the high and higher middle classes; they were able to buy by way of cash payment transactions or through short term financing (3 to 4 years), where a group of investors (or final users) will create a specific trust to develop a real state project (apartments or lots), paying cost price during the construction period. This means the buyer is paying the real cost of the house/lot/apartment during the construction period plus the developer fee (very common in Argentina).

What will be found lacking is land for suburban developments in locations with infrastructure and public transportation. The last suburban trains lines were built by British companies until the nationalization occurred in 1948; and Metro lines in the City of Buenos Aires were not increased in any station from 1945 to 2000. Whereas bricks can be manufactured without limit for a minimal investment, infrastructure served land cannot.

## OPPORTUNITIES

What is most important to any developer is the purchase of land. Here is where a major upside surfaces, and where the struggle between the various investors comes to light.

## Housing in Argentina

Land is not unlimited if the following requirements are to be met:

- Nearness to public transport (ideally rail services).
- Rural land close to urban districts in order to produce usage changes.
- Have set acreages in order to achieve scaled economies during urbanization, thus attracting the interest of municipal and provincial authorities. This would cause a definite settlement in the district.
- Purchasing values that will allow the offer of land on which future housing will be built within the Procrear Program range<sup>10</sup>

Available land is limited and values will rise markedly within the short and medium span.

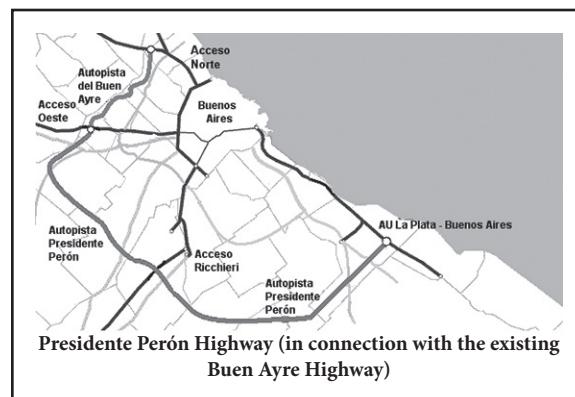
### LOCATIONS. AN OPPORTUNE EXAMPLE

Whereas the City of Buenos Aires could grow in three different directions (south, west and north), a developer group, which I have been a part of, has carried out a thorough study with in-depth analysis made by Marketing & Estadística SRL<sup>11</sup> with a major emphasis on the southern areas of Greater Buenos Aires; this, we believe, would generate increased values for various reasons outlined below.

This has been relegated for many years with respect to infrastructure and access roadways to the City of Buenos Aires.

- The extension of the Buen Ayre highway (Presidente Perón highway) is in full swing and will reach Puerto La Plata, at Ensenada (the first Port of Rio de la Plata), thus creating a new ring highway for Greater Buenos Aires in-between the rings of General Paz highway and Route 6. It is estimated that work on this project will be completed by the year 2020 (see map).
- The “General Roca” railway (“Constitución” station to “Alejandro Korn”) branch line has recently been extensively renewed, and the service is operated with first class rolling stock.

- There are still rural areas in the vicinity of the urban build-up (in many cases separated only by a roadway) which offer the possibility of achieving a change in land-use.
- In the nearby districts there are 580,000 households, which constitute 12.5 percent of homes in the Province of Buenos Aires.
- It is one of the areas of major density and, what's more, has a great availability of rural land ready to be transformed into urban locations.

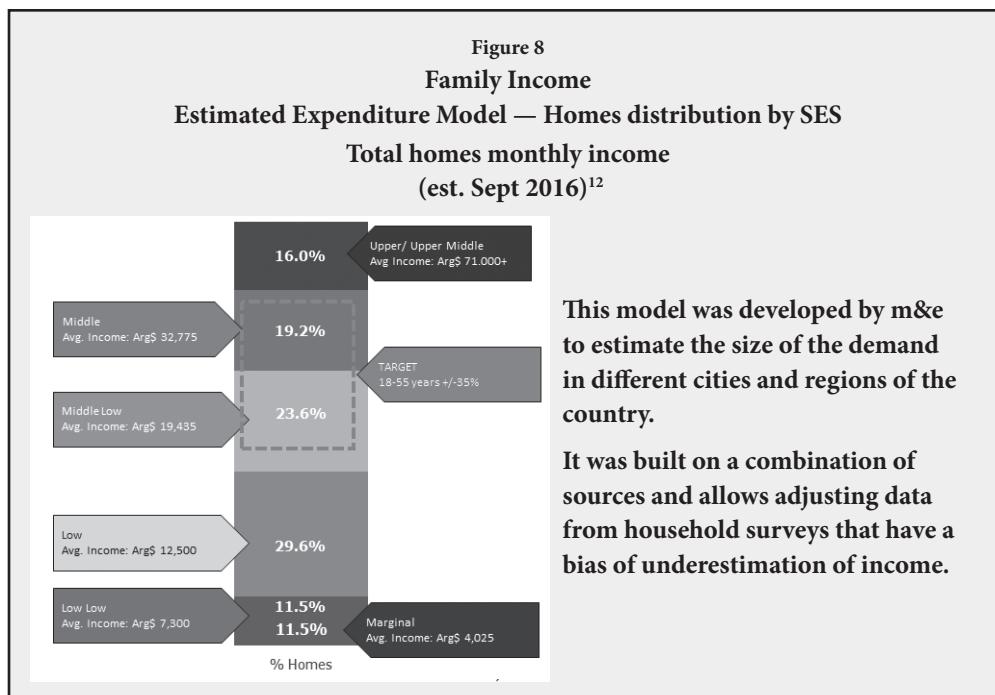


- The distance from downtown Buenos Aires to Alejandro Korn is less than the distance to other areas such as “Escobar”, “Pilar” or “General Rodriguez”; the latter shows a greater urban development.
- The urban area in this case, and in areas in the surrounding vicinities, becomes rural land within 20 blocks from the railway tracks, in most directions.

### WHERE IS THE OPPORTUNITY?

1. Create a full-scale housing solution for the middle class and lower middle class; which have been, to date, largely neglected and can be considered the major social stratum in Argentina, as shown in Figure 8.

**GLOBAL CITIES**  
**Housing in Argentina**



Source: m&e consumption estimation based on Income & Expenditure Model, INDEC: EPH, ENGH, Índice de variación salarial, Gastos en alimentos en SPM. As of september 2016

2. Develop housing, such as has been done in other countries, in order to produce a lowering of the housing deficit (See Figure 1).

It is of fundamental importance to develop an identifiable quality brand that later will sell itself based on the experience of the consumer. A low-cost house should be developed to offer quality finishes, be energy efficient and absolutely rational in its conception and building process.

Home sales, especially involving this type of housing, can be costly if commissions, notary public fees and other fixed costs are considered. To minimize incoming and outgoing expenses, thought should be given to the possibility of expanding the house efficiently whenever an extra bedroom or playroom becomes necessary.

Housing development is a must in order to furnish the consumer with a product that has a commendable design. The building of a home is a commodity with similar returns in any part of the world. However it is necessary to build the house and sell it, in order

to obtain a real profit which is brought about by the transformation of land use.

Rural land is today going for U.S. \$6 per square meter. If the use of the land is brought about efficiently to a usable 60 percent (taking into consideration requirements for roads, public areas such as parks, schools, community services, etc.), the cost of saleable land would be U.S. \$10 per square meter.

The cost of building on rural land in order to transform it into urban property with streets, electrical services, drinking water, sewage disposal, etc. comes to a net of U.S. \$25 per square meter of saleable land. The final cost of the plot would be about U.S. \$35 per square meter.

Nowadays, in the analyzed area, plots with lower quality services and a similar location are sold at U.S. \$70 per square meter. The yield is approximately 100 percent.

In forthcoming years Argentina will certainly be a hot market. ■

**GLOBAL CITIES**  
**Housing in Argentina**

## **ENDNOTES**

1. Source: IMF (International Monetary Fund).
2. Ibid.
3. Angus Maddison (1926-2010). British economist who dedicated his life's work to reconstruct the size and rate of growth of the global economy since the birth of Christ up to the present time.
4. Cámara Argentina de la Construcción. Lago, Fernando. "Pensar el futuro: construcción y desarrollo 2016/2020" 1<sup>a</sup> ed. Adaptada. CABA, FODECO 2015. ISBN 978-987-1915-64-4 and "Estimación del Déficit Habitacional Argentino" Ing. Daniel Galilea; Arq. Guillermo Tella.
5. Source INDEC (National Institute of Statistics and Censuses). Projections and estimations from National population, homes & houses Census 2010 Results: [www.indec.gob.ar](http://www.indec.gob.ar).
6. Source: JPMorgan.
7. Nicolás Dujovne, economist. See: <http://www.lanacion.com.ar/1947685-menos-inflacion-y-credito-mas-barato-claves-del-porvenir>.
8. Source: Torcuato di Tella University, based on data furnished by the Central Bank of Argentina.
9. "Procrear" program. See: <http://www.procrear.anses.gob.ar/casa-propia>
10. Ibid.
11. Marketing & Estadística: "Territorium m&e: Sociodemographic Analysis of Alejandro Korn Corridor", September 2016., See: [www.marketingyestadistica.com](http://www.marketingyestadistica.com).
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# Growth vs. Sustainability: Can Tokyo Have It All?

A strong economy or a stable lifestyle: Which scenario is preferable?

BY HIROYUKI ISOBE, CRE, FRICS

## I. INTRODUCTION

I GREW UP IN THE 1950S AND 60S WHEN THE Japanese economy was experiencing a strong growth. Everybody in Japan believed that tomorrow would be better than today as long as we worked hard. Dr. Ezra Feivel Vogel published a book titled *Japan As Number One* in 1979 in which he analyzed the secret of the rapid economic growth that made Japan second in the world in terms of GDP. However, Japan's GDP has fallen since 1996, whereas the United States' has grown twofold and China's has increased twenty times during the same period. Although Japan is currently ranked third next to China in GDP, Japan's nominal GDP actually remains at 23 percent of that of the U.S. and 38 percent of that of China. Does it mean that Japan's economic presence within the globe has substantially decreased? Will it be weakened further?

### About the Author

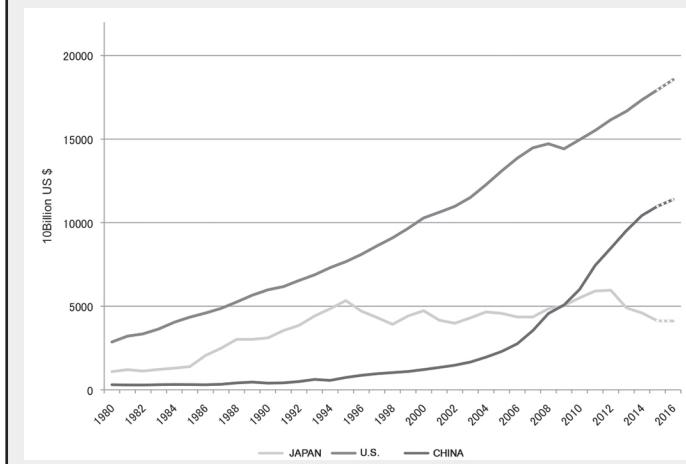


Hiroyuki Isobe, CRE, FRICS, is a certified real estate appraiser in Japan and the chairman and founder of Japan Valuers Co., Ltd. in Tokyo. Since establishing his appraisal firm in 1983, he has performed various counseling assignments in regard to city planning, feasibility studies, and market researches in Japan and the U.S. He has been heavily involved in valuation and analysis after the real estate securitization scheme came into effect in early 2000s. He has recently engaged in the valuation and advisory projects in Myanmar, Malaysia, New Zealand, Guam, California, and Hawaii and recently established a company in Myanmar for real estate counseling.

He was honored to be the first Japanese CRE in 1988.

Does Japan still need to enjoy further growth? Isn't Japan already in a position to be able to enjoy a fairly matured level of growth among developed countries?

**Table 1**  
**Nominal GDP Trend of Top Three Countries**



Source: IMF

## Growth vs. Sustainability: Can Tokyo Have It All?



Tokyo is one of the most developed cities in the world in terms of public railway networks. Using public transportation is definitely faster, less expensive and safer than driving.

Tokyo is highly transit-oriented and transit friendly. There are approximately 3,000km of railway networks within a 13,600km<sup>2</sup> area including the prefecture of Tokyo, Kanagawa, Chiba and Saitama (Metropolitan Tokyo Region, or TMR hereinafter), which is only 3.6 percent of Japan's total area of 378,000km<sup>2</sup> (see Figure 2).

Tokyo is also a place of Western influence. Starbucks Coffee for example, with some 20,000 shops globally, has over 1,000 shops in Japan; As of 2013, it is the third in the world next to the U.S. and Canada. In addition, nearly 44 percent of shops in Japan are located in TMR. As such, there are 2,497 French restaurants in TMR — which is 33 percent of all French restaurants in Japan.

Tokyo is both an efficient place to live, as well as a place where western culture mixes with traditional Japanese culture.

## II. THE POSITION OF JAPAN

Japan has been described as a small country. Because of its small size, economic success after the war is notable. Japan is definitely smaller than China or the U.S.; it's even smaller than the state of California. However, it is similar to the major European countries in size. It's more densely populated compared to China and the U.S., but the population density in the major European countries does not show substantial difference from that of Japan.

Japan's GDP is ranked third, but the gap between the U.S. and China will most likely widen considering the fact that the growth rate in Japan seems lower than both of these two countries. GDP per capita in Japan, on the other hand, seems to remain in a fairly good position among developed countries, although it is far below the U.S.

CO<sub>2</sub> emissions are one measurement of international economic positioning (see Table 3). As far as the carbon dioxide emission is concerned, the total amount seems relatively low considering the level of GDP. However, its per capita amount is not as low as the ones in European countries although it is lower than that of the U.S.

## Growth vs. Sustainability: Can Tokyo Have It All?

It could be said that Japan is doing fine, but that its performance is not as outstanding as in the past. Nevertheless, the statistics below indicate that Japan is third in terms of life expectancy, next to Monaco (89.57) and Macau (84.48). It is the No. 1 country in the world where individuals live the longest and in good health without the need for nursing care. It is

also one of the safest countries in terms of the murder rate.

Although we may not be able to expect substantial population growth, Japanese society has achieved a matured level so that it can afford residents a reasonably high quality of life.

Country	Area(km <sup>2</sup> )		Population-2015		Population Density (km <sup>2</sup> )		GDP-2015(Billion in US\$)		GDP per Capita -2015 (Billion in US\$)		Annual carbon dioxide emissions-2013 (Million ton)		Annual carbon dioxide emissions per Capita -2013(ton)	
	Ranking		Ranking		Ranking		Ranking		Ranking		Ranking		Ranking	
Russia	1	17,098,242	9	146,300,000	196	8.6	12	1,324.73	68	9,054.89	4	1,543.12	19	10.79
Canada	2	9,984,670	37	35,830,000	182	3.6	10	1,552.39	17	43,326.54	11	536.31	13	15.25
USA	3	9,826,675	3	321,600,000	140	32.7	1	17,947.00	6	55,805.35	2	5,119.69	11	16.17
China	4	9,596,961	1	1,374,620,000	54	143.2	2	10,982.83	75	7,989.72	1	8,977.09	41	6.60
Brazil	5	8,514,877	5	204,450,000	148	24.0	9	1,772.59	73	8,670.04	11	452.38	86	2.26
Australia	6	7,741,220	52	24,020,000	186	3.1	13	1,223.89	10	50,952.96	16	388.67	8	16.70
India	7	3,287,263	2	1,292,710,000	18	393.2	7	2,090.71	143	1,617.31	3	1,868.62	100	1.49
France	48	551,500	22	64,280,000	64	116.6	6	2,421.56	22	37,672.06	18	315.57	58	4.78
Japan	61	377,915	11	126,930,000	24	335.9	3	4,123.26	26	32,484.52	5	1,235.06	21	9.69
Germany	62	357,022	16	81,900,000	37	229.4	4	3,357.61	20	40,996.46	6	759.59	24	9.25
Italy	71	301,340	23	60,800,000	44	201.8	8	1,815.76	27	29,864.47	17	338.22	52	5.57
UK	78	243,610	21	65,100,000	32	267.2	5	2,849.35	14	43,768.82	13	448.70	33	6.99
Source:	CIA - The World Factbook		IMF - World Economic Outlook Databases		IMF - World Economic Outlook Databases		IMF - World Economic Outlook Databases		IEA		IEA		IEA	

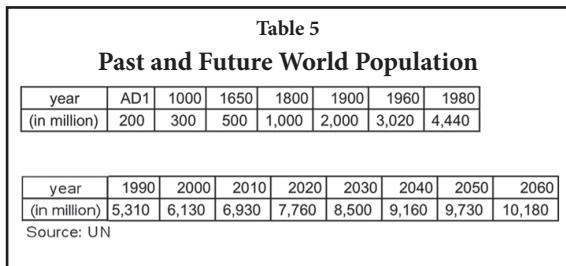
Country	Area(km <sup>2</sup> )		Life expectancy-2014		Happiness Ladder (Healthy life expectancy)-2013		Annual number of murders per 100,000 people-2011	
	Ranking		Ranking		Ranking		Ranking	
Russia	1	17,098,242	151	70.16	95	59.729	28	9.6
Canada	2	9,984,670	14	81.67	16	72.082	71	1.5
USA	3	9,826,675	42	79.56	27	69.689	42	4.7
China	4	9,596,961	99	75.15	53	64.726	NA	NA
Brazil	5	8,514,877	126	73.28	87	60.500	13	23.4
Australia	6	7,741,220	10	82.07	9	72.948	80	1.1
India	7	3,287,263	163	67.80	112	54.588	48	3.6
France	48	551,500	15	81.66	11	72.693	78	1.2
Japan	61	377,915	3	84.46	1	75.134	105	0.3
Germany	62	357,022	28	80.44	8	73.065	92	0.8
Italy	71	301,340	11	82.03	4	73.643	85	0.9
UK	78	243,610	29	80.42	18	71.645	84	1.0
Source:	CIA - The World Factbook		CIA - The World Factbook		UNSDSN-World Happiness Report		UNODC	

## Growth vs. Sustainability: Can Tokyo Have It All?

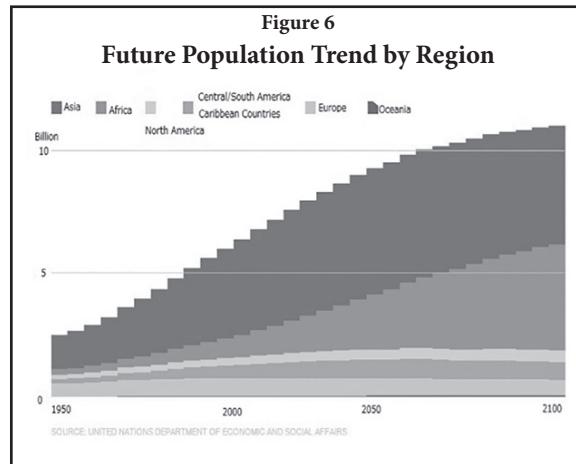
### III. MAJOR PROBLEMS THAT JAPAN IS FACING

#### III-1. Aging and declining population

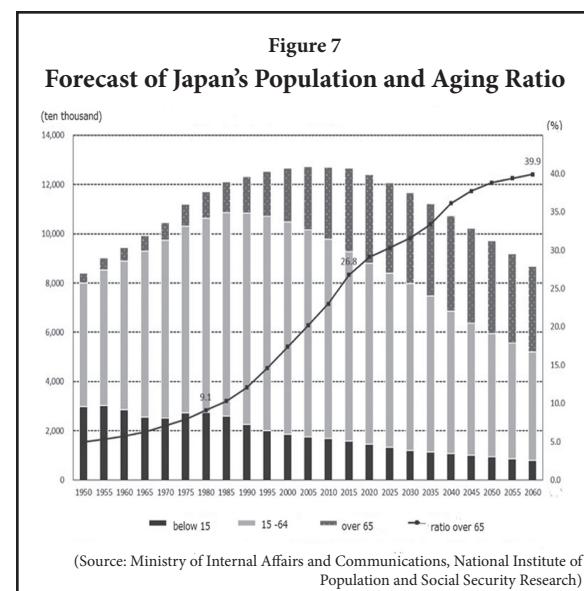
After the industrial revolution of the late 18<sup>th</sup> century, the world population started to experience a drastic increase. It reached 7 billion in 2015 and forecasted to reach 10 billion in the late 2050s (see Figure 6).



Most of this explosive growth will occur in developing countries. Developed countries are forecasted to either stabilize or have a decrease in population.



Japan's 2015 Census revealed the first decrease in population since its start in 1920. In addition, the ratio of aging population (over 65) is estimated to grow faster than many other countries despite the fact that, as of today, it is already over 25 percent. The working-age (15-64) population started to decrease in mid-1990s. As a result, it is highly likely that Japan will face not only an economic decline but also an increasing financial burden on pension benefits and various social costs to care for senior citizens.



#### III-2. Tokyo centralization

In contrast to the previously presented information, the population in Tokyo prefecture as well as TMR has continuously seen an increase. Over 10 percent of the population lives in Tokyo prefecture, where the area is less than 0.6 percent of the entire country. Approximately 30 percent of the population is concentrated in TMR. The population density in Tokyo prefecture is eighteen times as high as the national average.

**Table 8**  
**Population Concentration in Tokyo Metropolitan Region (TMR)**

	Population				Area(km <sup>2</sup> )	Density per km <sup>2</sup>	
	2010	2015	2015 Ranking among prefectures	Change Rate		2010	2015
Tokyo	13,159,388	13,513,734	1	2.69%	2,190.93	6,006.30	6,168.04
Kanagawa	9,048,331	9,127,323	2	0.87%	2,415.83	3,745.43	3,778.13
Saitama	7,194,556	7,261,271	5	0.93%	3,797.75	1,894.43	1,911.99
Chiba	6,216,289	6,224,027	6	0.12%	5,157.65	1,205.26	1,206.76
TMR	35,618,564	36,126,355	NA	1.43%	13,562.16	2,628.32	2,663.76
Japan Total	128,057,352	127,110,047	NA	-0.74%	372,968.00	343.35	340.81
Population concentration				Area %			
Tokyo	10.28%	10.63%			0.59%		
TMR	27.81%	28.42%			3.64%		
Japan Total	100.00%	100.00%			100.00%		

(Source: Census)

Annual income per capita in Tokyo is shown far above the national average and Japan's major business activities are dominated in Tokyo.

Although the absolute number is quite small, Tokyo is the most cosmopolitan city in Japan, and perhaps the world. One measurement of this is the high number

## Growth vs. Sustainability: Can Tokyo Have It All?

Table 9

### Economic/social concentration in Tokyo

	Per Capita Income		Number of Listed Companies		
	FY2011 (JPY in thousand)	Ranking	2015	Ranking	%
Tokyo	4,373	1	1,791	1	50.25%
Kanagawa	2,926	9	173	8	4.85%
Saitama	2,785	17	66	25	1.85%
Chiba	2,820	15	46	30	1.29%
Japan	2,915	NA	3,564	NA	100.00%

Source: Cabinet office

	Number of Registered Foreigners		Number of Movie Theaters			
	2015	Ranking	%	2009	Ranking	%
Tokyo	447,487	1	20.59%	111	1	16.47%
Kanagawa	176,010	9	8.10%	30	27	4.45%
Saitama	118,456	10	5.45%	31	41	4.60%
Chiba	134,374	11	6.18%	24	42	3.56%
Japan	2,172,892	NA	100.00%	674	NA	100.00%

Source: Ministry of Justice Source: Ministry of Internal Affairs

of movie theaters in Tokyo indicates that it has a substantial entertainment base.

Based on these concentrations, people living in Tokyo are entitled to enjoy Tokyo's advantage in every aspect. The number of wealthy households (Annual income is over JPY 10 million) per 100 is 8.75 in Tokyo — No. 1 in Japan — and far above the national average of 5.53. Wealth is also definitely concentrated in Tokyo. It should be noted; however, that the relative poverty ratio in Tokyo (the ratio of households with less than half of the average income in a particular area) suggests that 19.85 percent of households in Tokyo are in this category and Tokyo is ranked 15<sup>th</sup> among 47 prefectures.

The population concentration in Tokyo has also caused a serious gap with rural areas in various aspects such as demographics, regional economy, politics, etc. Of critical importance is that no region or prefecture will be able to avoid the declining population and overall aging trend. Tokyo is not an exception. Tokyo's phenomena might be more serious than other areas because the level of concentration in population is astonishingly extreme in Tokyo. Whereas Japan's population in 2060 is estimated to decrease to 86,740,000 — 32 percent lower than that of 2010 — Tokyo's population will decrease by 18 percent during the same period, which seems to suggest that the rate of decline is more moderate in Tokyo. However, the population of senior citizens (over 65) in Tokyo would increase to four million in 2060, which is larger than today's population of the city of Los Angeles.

Table 10  
Automobile Penetration

	Number of Cars Registered		Number of cars per household	
	2014	Ranking	2014	Ranking
Tokyo	3,088,434	Ranking	0.461	47
Kanagawa	3,029,957	Ranking	0.738	45
Saitama	3,112,216	Ranking	1.009	40
Chiba	2,720,627	Ranking	1.006	41
Japan	59,810,485	Ranking	1.069	NA

Source: Automobile Inspection &amp; Registration Information Association

### IV. TOKYO, ONE OF THE MOST ATTRACTIVE CITIES IN THE WORLD

As introduced previously, Tokyo is exceptionally transit-oriented and transit-friendly. The entire region is covered by railway networks and the city is highly mobile with a very low reliance on the automobile to conduct daily living functions. The car owning ratio in Tokyo is the lowest among 47 prefectures in Japan, as shown in Table 10. According to the 2014 version of the World Urbanization Prospects by the United Nations, there are 28 metropolitan areas with populations over 10 million, of which seven areas are populated with over 20 million. TMR is the only area with over 30 million, followed by Delhi, Shanghai, Mexico City and São Paulo, all of whose total population is less than 30 million.

Tokyo is undoubtedly the largest mega area in the world. It is not surprising, therefore, that the amount of GRP (Gross Regional Product) of TMR is positioned within the tenth if compared in the country GDP ranking.

Table 11  
Comparison of Renowned Cities

	Tokyo*1	London*2
Area (km <sup>2</sup> )	13562	12109
Population-2014 (million)	35.84	14.03
Population density (/km <sup>2</sup> )	2642.68	1158.64
GRP-2012 (billion in USD)	2026.22	800.38
	New York*3	Paris*4
Area (km <sup>2</sup> )	21482	12012
Population-2014 (million)	20.09	12.01
Population density (/km <sup>2</sup> )	935.20	999.83
GRP-2012 (billion in USD)	1446.66	800.71

Source: Tokyo Metropolitan Government

\*1: TMR

\*2: Greater London and a part of the surrounding 8 counties

\*3: Part of the state of New York, New Jersey, and Pennsylvania

\*4: Paris and the 7 surrounding provisions

## Growth vs. Sustainability: Can Tokyo Have It All?

According to *Monocle* magazine, “Tokyo’s hi-tech efficiency and traditional neighborhood values combine to offer a high quality of life for residents and visitors alike.”<sup>1</sup>

*Financial Times*, which conducts city analyzes every two years, selected Tokyo just behind Singapore in city ranking among 163 cities in the Asia-Pacific region.<sup>2</sup> Tokyo won in terms of level of infrastructure and strategy for foreign direct investment. If a measure to address English communication were approved, it could be ranked as the top.

The Global Cities Index announced by *A.T. Kearney* ranked Tokyo 4<sup>th</sup> in the world in terms of city ranking.<sup>3</sup> It was highly evaluated in the human capital criteria among others, such as the highest percentage of university graduates. On the other hand, Tokyo was ranked 18th in future potential due to the negative impact caused by the decline of population.

The Mori Memorial Foundation periodically evaluates 40 world cities by six functions to determine their comprehensive power. In 2015, Tokyo was ranked 4<sup>th</sup>.<sup>4</sup> Because of the 2020 Tokyo Olympics/Paralympics, Tokyo’s economy is ranked 1<sup>st</sup> and ranked 5<sup>th</sup> in terms of cultural interaction. This low ranking was due in part to the poor accessibility from Haneda Airport as well as a limited number of available flights both to and from the airport.

Table 12  
2015 City Rankings published by media

Media Ranking	MONOCLE	FINANCIAL TIMES
1	Tokyo	Singapore
2	Viena	Tokyo
3	Berlin	Taipei
4	Melbourne	Seoul
5	Sydney	Hong Kong
6	Stockholm	Kuala Lumpur
7	Vancouver	Beijing
8	Helsinki	Shanghai
9	Munich	Osaka
10	Zurich	Sydney
Source:	monocle.com/	ft.com/
Media Ranking	A.T. KEARNEY	THE MORI MEMORIAL FOUNDATION
1	New York	London
2	London	New York
3	Paris	Paris
4	Tokyo	Tokyo
5	Hong Kong	Singapore
6	Los Angeles	Seoul
7	Chicago	Hong Kong
8	Singapore	Berlin
9	Beijing	Amsterdam
10	Washington, D.C.	Viena
Source:	atkearney.com/	mori-m-foundation.or.jp/

### V. TOKYO REAL ESTATE MARKET AS PART OF CROSS BORDER CAPITAL FLOW

The Japanese real estate market is huge — the second largest in the world as shown in Figure 13.



Source: Prudential Real Estate Investors “Birds’ Eye View of Global Real Estate Markets: 2012 Update”

Japan’s Real Estate Investment Trust (J-REIT) started in 2001 and its market has steadily expanded. The current number of the public J-REIT is 56 and the total market capitalization is estimated approximately 15 trillion JPY, which is ranked second next to the U.S. in terms of the number as well as the market capitalization. Because the rate of Government Bonds has been at an extremely low-level, even negative, the Yield Gap has been approximately 5 percent. That is large enough to attract institutional investors from overseas as well. As a result, the Japanese property market has played an important role within the cross border investment market, even though the actual property yield is not as high as in a developing economy. What is important is that the institutionally qualified investment properties are, again, concentrated in the TMR. Tokyo is a large collection of population, economy, culture, politics, etc., and there are numerous investment grade properties in every property type, compared with other areas in Japan.

## Growth vs. Sustainability: Can Tokyo Have It All?

### VI. TOKYO SHOULD TAKE A POSITION TO LEAD THE SUSTAINABLE FUTURE

Japan experienced a surprising growth after WWII and has played an important economic role within the global economy as a member of both G6 and G7 countries. However, the economic strength of the G7 has weakened since the 1990s due to the rise of emerging countries such as Brazil, Russia, India, China and South Africa. Economic growth in G7 countries will be substantially lower than that of developing countries, as G7 countries are about to encounter various social/cultural issues.

Japan is one leader that will face these problems first and foremost among G7 countries. This is due to the low GDP growth; the fastest aging population and substantial decrease in the working age population; and the worst outstanding balance of government

debt in the world with 250 percent of GDP. In addition, the increasing expenditure for Social Security and medical care are significant factors to be faced.

Rapidly increasing urbanization is a critical issue in many developing countries as well. The ratio of urban population is already over 50 percent as of today and is forecasted to be 66 percent in 2050.

Can we afford to pursue further economic growth in this saturated market? Can we afford to pursue conventional economic activities based upon mass consumption of fossil fuels? Can we support ten billion people in the 2050s as well as a rapidly increasing aging population at the same time? Obviously, it is not easy to answer simply "Yes" or "No."

To achieve better living, a better environment and a more satisfying quality of life with lower economic growth will be a challenge for every nation, whether developed or developing countries.

What has to be recognized is that we will have to abandon the lifestyle of wasteful mass consumption, and we must eliminate inefficient use of resources. More importantly, we have to accept the fact that we can no longer enjoy affluent lives using unlimited amounts of these resources.

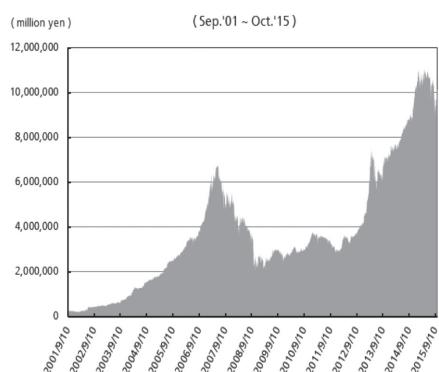
In September 2015, the United Nations adopted the 2030 Agenda for Sustainable Development at the Millennium Summit.<sup>5</sup> The international community declared that it would achieve sustainable growth with 17 Sustainable Development Goals (SDG) and 169 targets. We have no excuse not to reach these goals, which would not be possible using 19<sup>th</sup> century technologies.

Today, we are in the beginning of new era of the Fourth Industrial Revolution (4IR).

Our way of lives will definitely be transformed with revolutionary technology, such as Robotics, AI, Nano tech, Biotech, IoT and Autonomous Vehicles.

Tokyo, the largest intensely urbanized metropolis in the world, may have to be the leader to indicate the way to solve these issues. The key to it may be how we could visualize people's reasonable lifestyles and how we could utilize future technology appropriately. ■

**Figure 14**  
**J-REIT Market Capitalization**



**Table 15**  
**Location of J-REIT properties**

Asset type	Location	# of asset	%	Appraised value at the end of accounting period(million JPY)	%
Office	TMR	599	17.9%	5,456,277	35.4%
	Others	188	5.6%	1,160,842	7.5%
Retail	TMR	199	5.9%	1,583,534	10.3%
	Others	162	4.8%	1,259,110	8.2%
Residential	TMR	1106	33.0%	2,087,262	13.5%
	Others	474	14.1%	206,120	1.3%
Hotel	TMR	77	2.3%	412,750	2.7%
	Others	114	3.4%	576,959	3.7%
Logistics	TMR	156	4.7%	1,490,424	9.7%
	Others	93	2.8%	563,883	3.7%
Leased land	TMR	51	1.5%	234,948	1.5%
	Others	38	1.1%	129,787	0.8%
Others including health care facilities	TMR	48	1.4%	189,566	1.2%
	Others	45	1.3%	79,781	0.5%
Total	TMR	2,236	66.7%	11,454,761	74.2%
	Others	1,114	33.3%	3,976,482	25.8%
	Grand total	3,350	100.0%	15,431,243	100.0%

Source: "Tokyu Land Corporation J-REIT System" (TOREIT) as of October, 2016

## Growth vs. Sustainability: Can Tokyo Have It All?

### **ENDNOTES**

1. See <https://monocle.com/film/affairs/most-livable-city-2016-tokyo>.
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# How Risks are Shifted Within the German Real Estate Market

BY NICO B. ROTTKE, Ph.D., CRE

## WALL OF EQUITY AND DEBT

THE CURRENT INTEREST RATE ENVIRONMENT IN THE European Union (EU) creates the following situation, which can be described best as a “wall of equity meets a wall of debt”: Real estate projects, which could not have been realized/financed several years ago, are financed today using favorably priced equity, hybrid and/or debt capital. Because of steadily decreasing bank loan margins, loan-to-value (LTV) or loan-to-cost (LTC) ratios exceed the post-finance crisis level of over 80, sometimes 90 percent of the investment volume (the exceptions are the institutional products regulated by German investment law) — while still receiving very favorable terms, particularly in the area of “senior stretch loans.” Ever more crucial for success is the product, the piece of property, itself.

## INVESTMENT IN AB/BA LOCATIONS/CITIES

As a federally organized country, Germany does not have only one hotspot city, as the UK has with London, or France with Paris. Rather, the “safe core havens” (“A-cities”) are considered to be the top seven largest cities in Germany: Berlin, Hamburg, Munich and Cologne (all metropolises larger than 1 million inhabitants), as well as Frankfurt, Stuttgart and Dusseldorf (major cities between 600,000 to 800,000 inhabitants, with Frankfurt being the home of the European Central Bank).

Given the current favorable loan terms, core products in mostly A- or B-locations in A-cities, as well as A-locations in the second tier B-cities (major cities, 14 in total, normally between 250,000 to 600,000 inhabitants) of Germany are heavily overbought. Further, the so called “yield compression” takes place (yield levels decrease). This basically describes the situation where real estate gets more expensive, while the amount of cash flow generated by the property remains almost unchanged. This leads to a disconnect of the normally stable relation of rental income to investment price. A dangerous situation is

## About the Author



Nico B. Rottke, Ph.D., CRE, is a partner of EY Real Estate in Germany specializing in real estate capital and debt advisory. He consults the real estate industry with regard to capital procurement, real estate M&A as well as capital market services. He holds a Ph.D. in real estate finance and economics from EBS university as well as a Master's degree in Business Administration from EBS University and a MSc. in Real Estate from Georgia State University. Before joining EY Real Estate, Nico ran the Aareal Endowed Chair of Real Estate Investment & Finance at EBS University and was the President of the Institute of the German Real Estate Industry. Nico currently serves as advisory board member of ULI Germany, scientific advisory board member of ZIA (German Property Federation) as well as Fellow of the Royal Institution of Chartered Surveyors (FRICS) and Counselor of Real Estate (CRE). Nico is married, has 5 children and lives close to Wiesbaden, Germany.

created — considering the high LTVs/LTCs and the decreasing amortization periods for current German commercial real estate investments. A refinancing wave some years from now, with interest rates being 200 to 300 basis points higher, could move the market into a risky imbalance, as this would represent a multiplication of the interest burden: Property values might decrease simultaneously — in the worst case, accompanied by decreasing property cash flows — in times of potential economic recession/crisis scenarios.

Many investors have taken this thinking into their risk management considerations and now choose alternative investment strategies in order not to act pro-cyclically. But by doing so, they accept other systematic risks. Where will the pressure start leaking off of the “AB/BA-investment valve?”

Four strategies — sometimes combined — are chosen in order to mitigate structural investment risks.

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## I. ALTERNATIVE TIMING OF PURCHASES

Institutional investors in core products (German capital allocation sources such as insurance companies, pension funds, occupational pension schemes, as well as foundations) are confronted with very high prices — multipliers respectively — in core locations or for core properties. In order to avoid this dilemma of acquiring supposedly safe real estate at too aggressive a price level, institutional core investors now attempt to acquire properties earlier in their life cycle. Thus, they intend to buy in the phase of property development, combining the purchase with a competitive “purchaser financing” for the project developer, in order to be able to acquire the desired property for their own institutional portfolio at acceptable multipliers.

## II. ALTERNATIVE TYPES OF REAL PROPERTY

These days, the “conventional” German AB/BA property types, such as office, retail or residential real estate, are facing a high demand and, at the same time, an aggressively priced financing. As a consequence, institutional investors also consider completely different real property types as investment targets. This holds particularly true, because alternative investment markets to the real estate market (stocks, bonds, commodities, etc.) seem to be overheated or uncertain with regard to their return development as well.

Right now, in Germany, “managed real estate” such as corporate real estate (“light industrial”), hotel properties, as well as retirement homes/nursing homes and DIY superstores are “re-discovered” as “investment grade.”

## III. ALTERNATIVE LOCATIONS

Because of the yield compression in AB/BA-locations, A-locations in German minor C-cities (regionally important major- to medium-sized cities, 22 in total, with relevance for their periphery, normally < 250,000 inhabitants ) or D-cities (regionally important cities, 84 in total, without relevance for their periphery, normally < 100,000 inhabitants) are increasingly considered to be “investment grade” or are “artificially elevated” to investment grade status by accumulating large well-diversified portfolios consisting of smaller office or retail properties. Since alternative locations to A-locations are missing in these smaller cities, these investments in originally “Non-Investment Grade-

Cities” offer indeed higher returns. The risks of a lack of fungibility or liquidity are diversified and thus reduced by a portfolio approach, creating even lower volatilities as in comparable AB/BA investments (due to the missing possibility of substituting the given locations).

## IV. ALTERNATIVE FORMS OF FINANCING

These new forms of investment alternatives require new forms of financing and a reconsideration of the risk allocation. Financiers in the non-banking sector, such as family offices or hedge funds, as well as (German) mezzanine funds, take entrepreneurial risks, allowing them to achieve higher LTVs/LTCs; this also has regulatory reasons as deterministically organized players, such as banks (under Basel III), insurances companies (under Solvency II) or property funds (under AIFMD (Alternative Investment Fund Managers Directive 2011/61/EU)/ KAGB (a German Capital Investment Act)) have to obey to the boundaries of their respective regulatory environment. With purchases often requiring a high leverage in order to achieve a high return on equity for the investors/limited partners, subordinate financing or external equity financing becomes the rule, rather than the exception, at least in the less regulated investment world.

## WHAT ARE THE CONSEQUENCES OF THIS NEW SITUATION?

Real estate and capital markets inevitably grow together, at a higher speed than ever before. What does not sound spectacular at all to Anglo-American investors is comparably new to the historically bank-driven and financed German real estate market. For the reasons mentioned above, investors intensively consider not only conducting large capital investments solely by directly purchasing the asset (key word: “regulatory equity”), but also by setting up alternative investment fund (AIF) club deals or purely by using capital markets products, e.g., in the format of an investment in the same property using a bond structure via a private placement.

Ultimately, stricter regulatory rules lead to reduced risks on the real estate and financial markets in some instances, but cause a shift, and thus systematically, an increase of risks in other areas. The situation is intensified by the fact that, due to missing inflation, a real devaluation of nominal loans currently does not

## How Risks are Shifted Within the German Real Estate Market

take place. This is of importance considering the high LTV/LTC environment next to the low, close to zero inflation rate (given that commercial rental contracts are regularly linked to an inflation index). In times of crises, this might cause a substantial problem.

In contrast to former cycles, riskier real estate investments in Germany are executed at an adequate pricing by the non-senior-debt lenders, i.e., the subordinate and external equity lenders. Consequently, in comparison to high-yield investors, low-risk investors will be confronted with fewer negative surprises. However, the first group consciously invests at the highest risks and thus, they (should) have diversified their asset allocation accordingly.

Interestingly enough, as a side-note, international real estate investment is sometimes problematic, as different levels of return promises and capital interest rate promises exist, e.g., in a U.S./German comparison. While German mezzanine providers contract between 6 to 12 percent for their mezzanine loans, U.S. hedge, private equity or mezzanine funds typically demand returns larger than 15 or 20 percent.

### **WHAT IF ...**

#### **... WHAT IF INTEREST OR INFLATION RATES INCREASE SHARPLY IN THE EU?**

Interest rate levels and inflation rates normally show a high level of correlation because of the control function of central banks, in this case, the European Central Bank (ECB). At the moment, a locked-in situation can be observed, one of the reasons being the structural challenges of the EU. Accordingly, an increasing interest level would currently be counterproductive for the economic development of the EU ("consumer good" inflation).

For the development of a "healthy" German real estate market (the "investment good" inflation, which is officially not measured), a moderate increase in interest rates would both be desirable and preferable, in order to prevent future real estate markets turmoil. However, even such a moderate increase seems to be unrealistic right now.

A "sharp increase" scenario would lead to a situation, in which riskier and very risky projects (such as property development) would not receive a bank financing at current margin conditions and LTVs/LTCs anymore. The latter financing could only be achieved by "entrepreneurial" external non-bank financiers such as family offices, private equity funds, etc., at very expensive (risk adequate) conditions. The interest burden would be so high, that projects using these financing sources could not be realized anymore within the current structures (i.e., not enough equity and/or not enough ongoing project cash flow).

If sharp increases in interest rates happened, problems would occur both on the market for real estate development, as well as on the market for refinancing bad, not well-maintained, existing assets at high LTVs. The latter cash flows would be challenged as the projects would not be able to service interest and principal payments with their existing cash flows. They would be "under water" and would need expensive refinancing which could not be afforded. This might lead to pro-cyclical sales of this market group at the same point in time and would thus lead to market devaluation. The German market would calm down to a certain degree in a currently heated up situation, as long as the interest rate increases would not unexpectedly be too sharp and thus the reactions to it too strong.

In summary, it can be stated that a "soft landing" would be healthy for the German property market. This could be caused by moderate, step-wise, pre-announced interest rate increases over a longer period of time. A "hard landing" introducing abrupt changes in the interest rate could lead to heavy market imbalances (compared e.g., to the U.S. housing market in 2007).

Meanwhile, we are, however, far away from such scenarios. As the saying goes, "it ain't over 'til the fat lady sings..." This saying refers to the last, 20-minute long song of the opera *Der Ring des Nibelungen*. When the song comes to an end, Armageddon happens. But for right now, the lady still keeps on singing ... ■

# Water in the West

BY ROBERT E. DIETRICH, CRE

**DRIVING THROUGH MY NEIGHBORHOOD IN**  
Southern California, I see a different landscape than when I moved in a little more than a year ago. In my gated community, there once was an almost cult-like grooming of yards with massive green carpets of grass. The homeowners' association gave out tickets to residents outside the cult who allowed grass to be less than perfectly coifed. Now I see the same houses with thousands of square feet of dead grass, exposed dirt, dying shrubs, and, in some cases, artificial grass.

What is causing these changes? Will the West run out of water? Are changes needed in regulations? How will they be implemented? These are some of the questions that are being discussed in California and the Western U.S. In this article, I will address the issues involved in the water situation, and provide some insight on how the water problem will be resolved.

## BACKGROUND — WHERE ARE WE?

Through the end of 2016, California was in the fifth year of one of the worst droughts in state history. Even though the drought officially ended in early 2017, the long drought exposed a number of weaknesses in the State's management of its water supplies. The extended drought and record heat caused the state and local governments to react with new laws, regulations and policies regarding management and allocation of water.

Shortly after the drought was recognized in January 2014, the state declared a drought emergency. That declaration called for local water agencies to implement water shortage contingency plans. These statewide regulations included limiting landscape irrigation to three days per week along with additional restrictions such as the hours of the day when irrigation can take place.

In early 2016, the state returned setting conservation goals to local control. The State recognized the water conservation goals were being achieved. Most

## About the Author



Robert E. Dietrich, CRE, is the National Practice Leader for the Specialty Valuation Practice Group at Colliers International Valuation & Advisory Services, located in Los Angeles. Mr. Dietrich has performed valuations involving a wide variety of property types ranging from high rise offices to farms and ranches. He has valued special purpose properties such as port facilities, ski resorts, and others. He has also done work in the area of water rights. Areas of specialization include planned developments, subdivisions, leasehold/leased fee analyses, and project modeling. He has been in the advisory business in the Western United States for more than 40 years.

municipalities have implemented the state's mandate as a minimum, with some communities reaching further to curb water use.

In Northern California, the drought was especially harsh on small towns that historically depend on flowing streams or shallow groundwater. One interesting case is the town of Paskenta which ran out of water in 2014. It then reached an agreement to buy water from the town of Corning, which is 20 miles away. Starting in August 2015, water was trucked from Corning with water users in the Paskenta Community Services District being limited to 100 gallons per day. While a wet winter provided the community with much needed water, the agreement with Corning was renewed again in 2016.

California made a steady stream of headlines with the drought in 2015 and 2016, but water shortages are not a uniquely western problem. In September of 2016, the City of Worcester, Massachusetts (population 185,000) issued Stage 3 drought restrictions banning all outdoor irrigation, washing driveways, filling pools, and other limitations.<sup>1</sup> Even the South has not escaped. In Birmingham, Alabama, the Birmingham Water Works announced a Stage 1 water alert

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in September of 2016.<sup>2</sup> The drought advisory was increased to Stage 3 in October 2016, initiating 200 percent surcharges for excess water surcharges. Stage 4 of the drought management plan was initiated a month later in November which increased the surcharge to 400 percent.<sup>3</sup>

Many communities saw severe impacts from the drought due to declining local supplies. However, most of the large urban areas of the west (Los Angeles, San Francisco, San Diego, and Phoenix) are served by a number of complex water delivery systems. While there is use of groundwater in each urban area, surface water imports are a major water source.

The Metropolitan Water District of Southern California (“MWD”) is the largest water utility in the country. MWD provides treated water for more than 19 million people in its 5,200-mile service district, an area the size of Connecticut serving a population equal to that of the State of New York. The MWD was formed in 1928 to operate the Colorado River Aqueduct (“CRA”), which brought water to Southern California from the Colorado River.<sup>4</sup>

MWD imports about 45 percent of the water for Southern California. One source is the Colorado River via the CRA. Another source is the State Water Project (“SWP”) which delivers water from the Sacramento and San Joaquin Rivers in Northern California. Additional water includes local surface water, groundwater, recharge, and limited other resources.

When the Colorado River Compact became law in 1922, 7.5 million acre-feet<sup>5</sup> of water were allocated to the Lower Basin states, including 4.4 million acre-feet to California.<sup>6</sup> That allocation was based on historic data showing that the annual river flow was 16.4 million acre-feet per year.<sup>7</sup> In actuality, the average flow was much lower. The law that allocated Colorado River water created an issue of over-allocation of the river from the very beginning.

During the intervening years, California has been able to acquire unused allocated water from upstream users. However, continued population growth and drought in the river basin for the past 15 years has reduced the availability and, in the future, that supply source for Southern California will be unavailable. In addition, the Quantification Settlement Agreement (“QSA”) for the Colorado River was completed in October 2003. This

agreement provides California the means to implement water transfers and supply programs, but mandates that the state live with its 4.4 million acre-foot basic annual apportionment of Colorado River water without access to excess flows.<sup>8</sup>

While the Colorado River is seeing reduced supply, the SWP also experienced declines over the last few years due to the extended drought. In addition, diversion of water for maintenance of endangered species have reduced water supplies significantly to farms in the Central Valley. In response, farmers are using pumped groundwater to make up the shortfall in SWP deliveries. This has caused sharp declines in the water table in some areas of the Central Valley. The drop has caused many farmers to drill new and deeper wells, but the mining of groundwater creates other problems.

Since groundwater pumping started over 100 years ago, the dropping water table has caused surface subsidence in the Central Valley. The drop in the elevation of the Central Valley varies from a few inches to more than a foot per year. Unfortunately, when the water table drops, the aquifer material collapses so that if water ever is recharged into the Valley, the holding capacity will be less. The lowering of the water table is causing permanent damage to the aquifer. As a side note, the drop in the elevation of the Central Valley is the largest single modification of the earth’s surface caused by man.<sup>9</sup>

A cure for the Central Valley water shortage would be to take productive farmland out of production. However, the Central Valley is one of the most important sources of food production for the US. According to the USGS, “Using fewer than 1 percent of U.S. farmland, the Central Valley supplies 8 percent of U.S. agricultural output (by value) and produces 1/4 of the nation’s food, including 40 percent of the nation’s fruits, nuts, and other table foods.”<sup>10</sup> A simple cutback in food production would not be the answer as rising food prices would cause as much pain to the U.S. economy as the water shortage.

**ARIZONA’S RESPONSE TO GROUNDWATER OVERDRAFT**

To avoid a catastrophic decline in groundwater, government intervention will be required in most cases. To avoid similar problems, the Arizona legislature created and passed the Groundwater

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Management Act in 1980. The Act established Active Management Areas (“AMAs”) in major groundwater usage areas such as Phoenix, Tucson, Prescott, and Pinal County. The law established Irrigation Non-Expansion Areas (“INAs”) in more remote areas, like Douglas and the Sulphur Springs Valley in the southeastern corner of the state.

This 1980 Groundwater Management Act resulted in the registration of all wells in Arizona, and required metering of water usage of non-exempt wells inside AMAs. The law also allowed fees to be charged for pumping groundwater in AMAs. Farmers were initially adamantly opposed to the new laws. However, the Carter Administration was withholding the start of the Central Arizona Project<sup>11</sup> (“CAP”) until steps were taken to control the groundwater situation. Thus, the farmers were left with a decision to either continue depleting the groundwater supplies or submit to regulation with the benefit of a new source of surface water.

#### **SAN DIEGO’S SOLUTION FOR NEW WATER SUPPLIES**

Large Scale capital projects can be a major benefit to cure the current water ills in the state. However, other actions also can have a major impact. Conservation is a growing source of new supply in California, but an equally interesting potential source is to increase the efficiency of water delivery and application systems, especially in agriculture.

The largest irrigation district in the nation is the Imperial Irrigation District (“IID”) located in the Imperial Valley of California, about 100 miles east of San Diego. San Diego has been experiencing a growing population and a shortage of new water supplies. In order to maintain its economy, about 25 years ago, San Diego began to look in other areas to find new water sources.

The San Diego County Water Authority (“SDCWA”) first approached the IID about 20 years ago.<sup>12</sup> The problems with large-scale water transfers were numerous and required some out-of-the-box thinking. However, a solution was developed and the transfer went into effect in 2003. The results were a new source of water for San Diego in the amount of 200,000 acre-feet annually, or enough water to serve more than 2.0 million people with nominal conservation efforts. At the same time, the water transfer amounted to less than

10 percent of the 3.1 million acre-foot allocation of Colorado River water to IID.

The farmers of the IID were interested in some type of partial transfer. However, returning large amounts of land to fallow status would hurt the local communities of El Centro and Brawley, which depend on agriculture. In addition, along with the Yuma Valley nearby, the Imperial Valley is one of the major sources of winter vegetables in the U.S. So the question arose as to how to conduct the transfer without halting agriculture. The answer was to increase efficiency.

The IID is also a drainage district. Due to soils with high levels of clay, most farms in the IID service area are improved with underground tiles that gather water as it percolates through the soil and drain it off the land.<sup>13</sup> The IID operates a series of laterals, ditches, and canals that gather the water and drain it into the Salton Sea.

Instead of allowing the water to drain off the land, a proposal was made to improve the efficiency of farming so that water was used more effectively. Rather than flood irrigating, farmers would use drip systems or other types of irrigation that would reduce water applied to the farmland. The saved water then could be sold to the SDCWA without impacting the local agricultural economy.

Part of the transfer regulations allowed some land to be fallowed. In fact, most of the water transferred in the first 15 years of the plan are to be generated from fallowing land. Part of the reason is that it would take many years to upgrade irrigation system efficiencies.

Part of the agreement involved transportation. Instead of developing a transmission system for the IID water, a deal was made with MWD to divert larger quantities of water upstream at Parker Dam to be delivered through the MWD system. Water transfers now account for about 100,000 acre-feet per year and should ramp up continually to the full allocation through the end of the decade. The net result is that SDCWA’s reliance on MWD water has dropped from 95 percent to 30 percent, although it still is dependent on the MWD delivery system.

#### **GROUNDWATER REGULATION IN SOUTHERN CALIFORNIA**

There are solutions to the water shortage that have been implemented in areas of California that are worthy of duplicating. Any solution needs to involve

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some degree of political action and regulation. California already is one of the most heavily regulated states in the country but, surprisingly, in a water-challenged state, water regulations, to a great degree, are based on laws and regulations first applied more than 100 years ago.

In Southern California, groundwater has been used for agriculture and to support growing cities for more than a century. At the turn of the last century, there were large areas of Southern California that produced artesian wells. As pumping increased, the water table started to drop and these wells stopped flowing. The drop in the water table was, of course, a concern to municipalities serving the growing population. However, another problem emerged in the form of saltwater intrusion into wells from the Pacific Ocean.

In order to stop the negative impacts of the groundwater pumping, Southern California water agencies, political entities, and the courts implemented three important measures: 1) adjudication of the basins, 2) installation of seawater barrier injection wells, and 3) the creation of Water Replenishment District of Southern California ("WRD"). The adjudication first took place in 1961 in the West Coast Basin, with the Central Basin adjudication being completed in 1965. The court set caps on groundwater withdrawal and created a water master plan for each basin in order to oversee use and the transfer of groundwater rights.

Currently, all Southern California groundwater has been adjudicated and an active market exists for the sale and lease of groundwater rights. Most of the basins are at or near achieving a balanced yield where groundwater pumping is off-set by recharge (natural and man-made).

#### **CALIFORNIA'S NEW GROUNDWATER LAW**

In California, about half of the water used is for environmental purposes for maintaining eco-systems. Statewide, agriculture consumes more than 80 percent of the remaining water, and that figure jumps to more than 90 percent in the Central Valley. In order to address the groundwater overdraft problem state-wide, Central Valley farmers will need to be involved in the regulatory process.

In September 2014, California Governor Jerry Brown signed into law three bills (AB 1739, SB 1168, and SB 1319) that were planned to create a framework for

sustainable groundwater management within the state. The new legislation created local agencies to generate local groundwater plans designed to suit the needs of the local population and economy. The requirements of the new legislation included:

- By 2017, Local groundwater management agencies must be identified;
- By 2020, over-drafted groundwater basins must have sustainability plans;
- By 2022, other high- and medium-priority basins not currently in overdraft must have sustainability plans; and
- By 2040, all high- and medium-priority groundwater basins must achieve sustainability.

Like the Arizona law, one of the appetizers to farmers was a state-approved \$7.5 billion water bond. Proposition 1 required voter approval and was passed in November 2014. Part of the water bond measure included \$2.7 billion for water storage projects, dams, and reservoirs, which would benefit farmers in the future.

An unintended consequence of the passage of Proposition 1 was that farmers started drilling new wells at a record pace. In the San Juaquin Valley, nearly 2,500 new wells were drilled in 2015, substantially more than the long-term average of about 500 new wells per year. While drought was at the front of this drilling frenzy, many farmers felt it was necessary to establish a dependable supply now in order to avoid likely limits on new drilling with the new legislation.

#### **URBAN AREAS — A SOURCE FOR NEW WATER**

One important need for increasing supplies is urban users. Although only 10 percent of California's water is used in urban areas, it is the urban users that are at the largest risk of impact from water shortages. The state has passed mandatory conservation measures and local authorities have gone beyond the minimum to transform water usage state-wide in urban areas.

According to the USGS, the average person uses about 80 to 100 gallons of water per day. In Southern California, that amount ranges from as low as 38 gallons per day in Santa Ana to more than 150 gallons per day in wealthier suburbs of Palos Verdes and Malibu. A huge amount of water can be generated if conservation efforts are stepped up. Some of the

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recent water conservation tactics have included:

- **Turf replacement:** MWD offered homeowners and businesses incentives that totaled more than \$400 million for removal of turf. Other communities and water agencies have followed suit.
- **Rebates:** Many districts and communities offer rebates for installing low water use household fixtures, such as low-flow toilets and clothes washers.
- **Sensors and sprinklers:** In some areas, rebates are offered for rain sensors for landscape irrigation, with some communities offering free sprinkler nozzles to properly direct and control water for landscape irrigation.

With continued urban conservation, much of California's water problem can be at least partially resolved. For example, if all agricultural users in the state increased water-use efficiency by 10 percent over the next 100 years, it would provide adequate supplies for urban areas with an additional 40 percent increase in population if consumption rates stay steady. If consumption rates drop, the supplies could support even more growth.<sup>14</sup>

According to Mark Taylor, a member of the CAP Board of Directors, "it is imperative that Western states continue to search for ways to encourage conservation and water transfers." Currently water laws based on prior appropriation can at times actually discourage conservation. If a water user does not use all of its water allocation, their allocation might be reduced or lost. There is no incentive for conservation and sometimes wasting the water is promoted. Therefore, formal water transfers like the transfer to the City of San Diego from the IID should be encouraged as a win for farmers who retain the water they need to farm, and urban areas that benefit from a new source of water.<sup>15</sup>

### **THE FUTURE**

There are many problems with providing water for California and the West. The population is growing and the risk of drought is causing concern about future water supplies. As noted earlier, much of the water from the Colorado River, is under continued pressure from over-allocation and consumption at high rates for urban and rural users alike. Changes in the regulatory framework have occurred and are being phased in over a period of many years. Conservation efforts are showing results, and the population is changing its

attitude toward water usage and conservation.

Actions by governments to regulate water use and encourage conservation have been successful in maintaining water for both agriculture and the growing population. Increased regulations will be phased in over time. In addition, new capital projects, coupled with increased farming efficiency and urban conservation, will lead to more dependable future supplies. While the outlook may appear dim from a perusal of headlines, the actual story is that government and users (farmers and urban dwellers) have been working toward solving the water problem and positive results are being seen. With continued movement in this positive direction, California and the West should be water secure through the end of the century and beyond. ■

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# Public Trust: Toward Building a Park and Open Space Legacy

BY CASSANDRA J. FRANCIS, CRE

INTEREST IN, AND USE OF, THE PUBLIC TRUST DOCTRINE has reached unprecedented levels recently in response to the growing threat that urban growth poses for parks and open spaces. The Public Trust Doctrine forces governments holding land assets in trust on behalf of the public to balance their short-term interests against the long-term protection of irreplaceable parks and open-space resources. Lawsuits aimed at protecting the public trust have increasingly been used by advocates to force local and state governments to carefully consider the competing interests at work in cases of proposed alienation or change of use of parkland and the impact on future generations.

The Public Trust Doctrine, with roots extending back to Roman law and the Magna Carta, maintains that some natural resources that are fundamental to public welfare and human subsistence are held in trust in perpetuity by the state as common resources for the benefit of current and future generations. In its role as trustee, the state has the duty and fiduciary obligation to prudently steward these natural assets in support of the public's interest and may not alienate or transfer assets for private purpose nor materially impair their value, accessibility or functionality. The Public Trust Doctrine speaks to both the right of the public to access, enjoy and benefit from these natural resources, as well as the obligation of the state to protect, manage and preserve the public's vested interest in these assets.

Cities across the world are experiencing a dangerous convergence of opposing forces: tremendous development pressure on the one front and the importance of public, open spaces on the other. Urban areas are experiencing a renaissance as populations flock to cities and the energy, economic activity and social amenities they provide. United Nations data indicates that almost 70 percent of the world's growing population will move to cities by

## About the Author



Cassandra J. Francis, CRE, has over twenty-five years of diverse real estate, construction and urban planning experience concentrated at the nexus of the public and private sectors. Currently, Cassandra leads an international real estate, construction and planning advisory services practice and conducts civil commercial mediations specializing in real estate and construction disputes worldwide.

Having worked in the commercial real estate, construction, transportation, housing, infrastructure, banking, Olympic Games and non-profit industries, Cassandra applies her broad experience to enhance projects, programs and processes. Cassandra is both a pro-development contributor to the built environment and an advocate for high-quality open space within the public realm.

Cassandra is a Counselor of Real Estate (CRE), a Fellow of the Royal Institution of Chartered Surveyors (FRICS), a Member of the Chartered Institute of Arbitrators (MCIArb), is certified by the American Institute of Certified Planners (AICP) and is a LEED Accredited Professional for Building Design and Construction (LEED AP BD+C).

2050, potentially adding another 2.5 billion people to urban populations around the world. This population growth will create huge demand to expand the built environment to accommodate this thriving mass. After decades of experiencing out-migration of urban residents and businesses, cities are now poised to attract their share of this growth and excited at the prospect of increasing resources and economic vitality.

Alongside this rapid growth in the built environment is an accompanying disappearance of the *inverse* of built space, i.e., open space, whether it be undeveloped privately-owned land or public land, some of which may be dedicated as parks or natural open spaces. Indeed, in urban centers we are currently seeing the erosion of open space, both public and private, at a rapid pace. If not carefully

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implemented, one does not have to look far into the future to see the potentially adverse result of this additional development and its impact on our relatively scarce open spaces. Many areas of our cities are already plagued by overwhelming density, traffic and overcrowding.

Building codes, zoning and land use controls are employed to manage and balance elements of the built environment to accommodate growth while avoiding the negative aspects associated with urbanization. Thoughtfully planned design, placement, density and scale of buildings are critical to the optimal functioning, aesthetic and enjoyment of our cities. The same is vitally true of the open spaces between buildings, although these open spaces are frequently an afterthought. Parks and open spaces are often not universally and preemptively valued for the respite and breathing space they provide, as a sanctuary to escape the city, but also a place from which to appreciate the urban jungle at its periphery. That our parks and open spaces are increasingly experiencing development pressure, particularly in key locations, is not surprising. It is crucial we protect our existing parks and expand our parks systems to meet the growing demands of growing populations.

Now is a time when cities are competing on a global basis for tourists, residents, Millennials, corporate headquarters, students and tax revenues, just to name a few. This global compulsion towards growth and the importance of the attraction and retention of these assets, has created a plethora of worldwide rankings including *The Economist's* Global Liveability Ranking, *Mercer's* Quality of Living Ranking, the *Metropolis'* Worlds Most Liveable Cities, Sustainable Cities Index, and *Monocle's* Quality of Life Survey. While cities vie to be the smartest, most liveable, most walkable, most bike- and dog-friendly, most connected and safest cities, parks are obvious assets in achieving high rankings. Cities around the world are going to great lengths to reclaim their littered and fractious waterfronts for public use and large urban parks are becoming some of the most important tourist destinations highlighting bespoke public art and guided Segway tours.

While few may think we are approaching a negative tipping point in the contraction of our parks and public open space, data indicates an emergent

and accelerating crisis if we do not proceed in a very disciplined manner. The Trust for Public Land's (TPL) ParkScore® and City Park Facts studies measure land owned by regional, state and federal agencies and evaluates these public assets relative to acreage, investment, amenities and access. For many urban areas, TPL's measures chart a decline in parks and public space that underscore the need for cities to aspire towards increasing the percentage of the population living within a ten-minute (half-mile) walk of a public park and to increase the total acres of public open space per 1,000 residents, a measure which is significantly linked to quality of life and livability indices in global city rankings.

By way of example, the City of Chicago prides itself on being at the forefront of urban park development, with an extensive historic park system connected by broad boulevards, the home of the famous Millennium Park "Bean," the revamped Northerly Island Nature Park and the newly-opened 606 Park Trail and Chicago Riverwalk. However, in TPL's 2016 data, Chicago ranks fourteenth of eighteen of the U.S.'s high-density cities having only 4.6 acres of parkland per 1,000 residents compared to a median of 6.8 (behind such older urban cities as New York at 4.7, Philadelphia at 6.9 and Boston at 7.6). The National Recreation and Parks Association recommends 6-10 acres of urban parkland for every 1,000 residents as a goal. While there are different factors that impact a city's ability to achieve this goal, when it is forecasted that urban populations will grow significantly in the next few decades, these numbers must be watched closely.

Beyond the competitive quantitative park measures by which cities are evaluated, there are qualitative factors as well, including those related to the functionality of parks, including their specific uses, their relative size, their location and their condition. Parks were historically defined as either active or passive, meaning perhaps having a natural, bucolic or formal garden setting versus having sports fields, beaches, pools or a community center. Now, in our increasingly thrill-seeking society, many parks are more likely characterized by their entertainment or commercial features, their festivals and events, including new interest in hosting zip lines, surf pools, climbing walls, Ferris wheels, music festivals, athletic events, restaurants, theaters, museums, other

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attractions and mega events in the pursuit of excitement, novel destinations and, of course, rental revenues. Many of these elements reduce urban open space and its utility and create a frenetic character far from what had been enjoyed in the past.

Loss of parkland due to private, cultural and institutional development (in the form of public schools, libraries and other facilities) and the increasing commercialization and privatization of park management and assets are putting further pressures on our public open spaces. This becomes increasingly true as easily available, low-cost, well-located land becomes more scarce in meeting the appetite of governments, institutions and the private sector for development sites. Cultural institutions and commercial entertainment destinations are wonderful endowments for a city and should be promoted, but not at the expense of public parks. While all these uses may create revenue or drive traffic to parks, and it is clear that revenues are needed to maintain park assets, there is already tremendous competition for the use of public open space, demonstrated by the well-publicized clashes between different park-using populations from dog walkers, organized sports teams, naturalists, festival goers and skateboarders, to name a few.

And further, it is a false prophecy to pronounce that it will be only “this one museum,” or just “one more” library as the appetite for these uses will continue to grow alongside population and humanity’s desire to innovate towards new experiences. Any confiscation of public parkland is a very dangerous precedent as we slide down the proverbial “slippery slope”: once open space is built upon or land (or its use) is alienated from public ownership, it will be virtually impossible to return to its former undeveloped, public state.

So how do we prevent the erosion and confiscation of public parks and their recreational or natural open space value which contributes to making great cities great? How do we convince leadership in growing cities that public parks are not lower-cost, shovel-ready development sites for the newest eye-candy institution, novel restaurant, or to be used at the whim of the connected, powerful and wealthy? One tool that has been used in the past with varying success is the Public Trust Doctrine, a modern take on an ancient legal premise which holds that the

government has a duty to current and future generations whereby it may not alienate key public assets that it holds in trust for the people.

The Public Trust Doctrine imbues the government with a fiduciary responsibility to manage and grow the value of specific public assets on behalf of trust beneficiaries, both current and future. The government, as trustee, is not allowed to transfer or otherwise reduce the public utility of such assets without the explicit approval of broader government (in many cases state legislatures) and only in cases where there is a demonstrated and substantial public benefit. This protection was originally focused on such resources as land along navigable waterways in order to allow the public to access water resources for fishing and recreational use, to which every citizen was deemed entitled. However, the Public Trust Doctrine has been extended in some cases in the U.S. and other countries to include a duty of the government to protect such public resources as inland parks, historic buildings, drinking water, natural energy resources and even the Earth’s atmosphere.

What is essential now is that we further perfect the Public Trust Doctrine as a tool to be used to protect public parks. There have been numerous attempts to use the Public Trust Doctrine to prevent the transfer of these public parkland assets to other uses that eliminate access or reduce their utility as open space. These efforts have resulted in varying degrees of success for a number of reasons. Park preservation efforts are often led by “friends of the parks” groups whose interest in parks is at the hyper local level. As these groups transform from local park boosters to organized crusaders in response to specific threats, these operations tend to be one-off operations, typically led by those not well-versed in the Public Trust Doctrine, who are volunteers with no ready funding sources to support protracted legal battles.

Additionally, local governments have increasingly utilized specific defenses to the Doctrine which have met some success when cases have been filed, often arguing bureaucratic technicalities (“explicit” vs. “implied” park dedication or arguing a park was never properly titled or intended as a park long term) and fairly dubious alternative public benefits (for instance, the collection of stadium sales taxes or a museum being open free to the public a few days per year) to support public parkland re-appropriation.

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Other loopholes pursued by government include the question of “standing,” where the government might claim lack of sufficient injury to the public or suing entity (in the case of the granting of a long-term ground lease with reversionary rights) or that actions are simply “exchanges” of public parkland (by providing lesser parkland elsewhere that is often of less utility, value and access). These tactics become very divisive and play into local politics, which can lead to targeted campaigns and influence peddling. Also, when appealing cultural institutions, attractions or celebrity-led initiatives attempt to control or use parkland, through time-sensitive and competitive national or global siting exercises, the false calculus is often employed that a city will only gain the new facility by giving up valuable public parkland.

Recent notable examples include the proposal to locate the Lucas Museum of Narrative Arts, dubbed the “Star Wars Museum,” on Chicago’s historic public lakefront. Despite the fact that the City of Chicago has had an ordinance in place since the early 1970s explicitly stating that there would be no further private development on the lakefront, the city attempted to dismiss a lawsuit opposing the use of the lakefront site, questioning the issue of “standing” and arguing the 99-year ground lease did not constitute an abdication or transfer of control of the site. In an interim decision, the federal district court found that the suing organization and members of the public, “who are beneficiaries of [the public] trust, must have the right and standing to enforce it” and that the Chicago Park District did in fact intend to alienate the parkland through the transfer of, “the exclusive right to use and control the museum site to a private entity.”<sup>1</sup> While the case did not reach its conclusion and the establishment of solid case law, the fact that the judge ruled against the City of Chicago’s motion to dismiss and allowed the trial to proceed was not only a significant victory for the Public Trust Doctrine, but caused George Lucas to look elsewhere to site his museum. The true tragedy of this process is that there were many nearby attractive city-owned alternative sites for the museum in Chicago, but the entrenched leadership remained focused on the protected lakefront site, losing a wonderful opportunity for the city.

Another recent example involved the expansion of New York University (NYU), a great city institution in the Greenwich Village community. NYU planned to build four new towers encompassing roughly 2 million square feet of commercial real estate consuming three parks on two residential blocks. The opposing lawsuit cited the Public Trust Doctrine’s protection against the government’s alienation of public parkland without the approval of the state legislature as trustee of the park for the public (which NYU had not obtained). NYU claimed the parks were never formally transferred to the Parks Department and therefore did not demonstrate “implied dedication” of the land for a park, although the parks were named, funded and maintained by the Parks Department for many years. The court found there was not an “unequivocal” or “official” act by the city to dedicate the land as parks, so NYU’s expansion was allowed to proceed. Actor, activist and Village resident, Mark Ruffalo, who was directly involved in this controversy, powerfully advocated, “The [public trust] doctrine is essential to the fight against the slow destruction of our public commons.”<sup>2</sup>

These examples display the need to make more robust the means available through the Public Trust Doctrine to safeguard against government evasion of its trustee responsibility to the citizenry which betrays long-standing public interests in the preservation of parks. We need to:

1. Deploy strong existing court precedents to create further judicial decisions that clarify the scope and application of the Public Trust Doctrine that reduce transaction costs for future enforcement and extend public trust protection to additional public assets that are also arguably being held in trust for the public by higher levels of government;
2. Dedicate existing and create new parks, proactively and formally, while no pressing, attractive development threats to parks obscure the unarguable, underlying importance of open space to city residents;

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3. Educate citizens of the state as to their individual interests in government-titled public trust assets to empower the broader public, to influence their legislators when facing decisions to prevent the alienation of public assets and resources; and
4. Encourage our local government and civic leadership to avoid the temptation to see parks as development sites and to exercise discipline in growing the city without impacting public open spaces.

It is important when considering our irreplaceable and life-giving public assets, including our parks and public open spaces, that we think in long-term generational timeframes, not in shorter election-cycle timeframes, particularly given the growth expected in our cities in the coming decades. It is ironic that, had not generations of visionary advocates

initially dedicated and fiercely protected these public open spaces, these very places would have already succumbed to development pressures eliminating the very parks our city leaders boast as the central life force of our cities. As a slight twist to that century-old hot tip provided by the brilliant philosopher, Mark Twain, “Buy land, they’re not making it any more,” let’s suggest, for the benefit of future generations of urban dwellers, “Save Parks, they’re not making them any more.” ■

### ENDNOTES

1. Memorandum Opinion and Order, United States District Court, Northern District of Illinois, Eastern Division; Case No. 14-cv-09096 Judge John W. Darrah. See: <https://cases.justia.com/federal/district-courts/illinois/ilndce/1:2014cv09096/303167/36/0.pdf?ts=1426242211>.
2. See: <http://www.nydailynews.com/opinion/mark-ruffalo-protect-city-parks-article-1.2246763>.

# In the Age of Global Cities, Submarkets Still Matter

## The Impact of Submarket Trends on Property Performance

BY VICTOR CALANOG, Ph.D., CRE, LLOYD LYNFORD, AND HSIAO-SHAN YANG, Ph.D.

### I. INTRODUCTION

LOCATION MATTERS FOR HOW COMMERCIAL REAL estate will perform over time. This statement will seem painfully obvious to industry practitioners, who may argue that (aside from timing and luck) location is the only thing that matters. However, in an age where capital flows across national borders relatively easily; when physical locations seem “optional” for a mobile workforce connected by the internet — does location still matter? And by how much?

In this article we investigate just how much location-specific factors influence commercial real estate performance, if at all. First, we update the results of Taylor, Rubin and Lynford (2000)<sup>1</sup> using panel data from specific commercial properties obtained from Reis, a provider of commercial real estate data that has been tracking building fundamentals like rents and occupancies since 1980. With quarterly data available from 1999, we now have seventeen years of time series covering two business cycles (expansion from 1999 to 2000; contraction from 2000-2001; expansion from 2002 to 2008; the 18 month recession from 2008-2009, and the recovery period from mid-2009 to the present). Not surprisingly, we find that location does matter when it comes to performance as measured by either property-level rent or revenue growth — consistent with prior literature (Capozza and Helseley, 1990).<sup>2</sup> However, we find that location matters even more during downturns, with submarket-specific factors accounting for up to two-thirds of how a building will perform during the recession of 2008-2009.

In the second part of the article we investigate whether location matters as much for “global cities”

### About the Authors



**Victor Calanog Ph.D., CRE,** is Chief Economist and Senior Vice President at Reis, responsible for the firm's economic forecasting, data analytics platforms, market valuation, credit risk and portfolio services. Dr. Calanog serves as co-managing editor of CRE Finance World, as part of the Board of Governors of the Mortgage Bankers Association, and on the Executive Committee and Board of Directors of The Counselors of Real Estate.



**Lloyd Lynford** has been President, Chief Executive Officer and a director of Reis since Reis' founding by Mr. Lynford and Mr. Jonathan Garfield in 1980. Mr. Lynford served on the board of the Real Estate Research Institute from 1993 to 1997 and served as its President from 1996 to 1997. He has lectured at The Wharton School, Berkeley, MIT, New York University, Columbia University and Cambridge University. Mr. Lynford graduated magna cum laude from Brown University. Mr. Lynford currently is on the board of directors of The Center for Fiction in New York.



**Hsiao-shan Yang, Ph.D.,** is an Economist and Data Scientist at Reis. Dr. Yang is responsible for credit and interest rate modeling, collateral performance and monitoring, and data visualization and analytic techniques. An expert in big data analytics and econometric theory, her papers have been published in the Strategic Management Journal, Management and Decision Economics and the International Journal of Business.

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— cities perceived to be more connected to global investment flows and a mobile workforce. Somewhat counterintuitively, submarkets — the proximate neighborhoods where specific properties are located — matter even more for global cities, suggesting that cross-border capital flow and a mobile workforce actually magnify the importance of location instead of diminishing it.

### II. THEORY AND DATA

In frictionless environments with perfect and complete information, location should not matter for pricing and fundamentals. The supply of properties will instantaneously rise where demand is great, and ebb where demand falls; rents and vacancies follow accordingly, and equalize across locations. However, real estate is a lumpy, indivisible asset: it takes time for supply to be built and inventory does not adjust quickly even as rents fall, unless demand contracts so severely that properties are demolished, converted or left fallow. Tenants do not move across buildings seamlessly and lease structures stabilize income trends and affect decisions on how to set rent levels. There are location-specific factors that affect the desirability of specific geographies, so much so that most cross-MSA regressions using U.S. data usually need to exclude New York and San Francisco to determine whether the effects being investigated are systematic or are driven only by these “superstar cities.”

But how much does location influence the performance of a specific property? Taylor, Rubin and Lynford (2000)<sup>3</sup> measured this by estimating equations of the form:

$$pij = \alpha Mij + \beta Sij + \gamma bij + \varepsilon ij \quad (1)$$

Where  $p$  represents measures of property-level performance for a specific building located in place  $i$  during time  $j$ , either in terms of revenue or rent growth.  $M$  represents metro-level measures of revenue or rent growth, and  $S$  represents submarket-level measures of revenue or rent growth.  $b$  is a vector of building-level attributes like age, size (in units or square feet of space, depending on the property type), or number of floors, that plausibly drives property-level performance.  $\varepsilon$  is the error term, assumed to be independent and identically distributed.  $\alpha$ ,  $\beta$ , and  $\gamma$  are the estimated coefficients for the respective independent variables. The key question they were

trying to answer was whether market practitioners ought to use market/metro/MSA-level variables, which had the advantage of being more readily available (estimates for rents and occupancies are produced occasionally by the U.S. Census via various surveys), or if using more disaggregated submarket-level variables offered an advantage. From cross-sectional estimates available at the time, the authors concluded that submarket-level variables accounted for between forty to fifty percent of a property's overall performance, while only approximately ten percent was explained by metropolitan market factors.

We now have the advantage of seventeen years of quarterly data from 1999 to 2015, allowing for analysis over time. Geographical definitions of submarkets remain based on patterns of locational preference expressed by end-users (tenants or owners) of specific property types, accounting for vehicular and mass transportation patterns, and the location of competitive projects.

The advantage of such an approach to geography is specifically what we are investigating in this article: does granularity matter? Or should we simply use larger metro-level aggregations in our analysis of property-level performance?

### III. ANALYTICAL APPROACH

The specification from equation (1) regresses building-specific revenue levels on contemporaneous and the first three lags of metro-level revenue levels; contemporaneous and the first three lags of submarket revenues; the first two lags of property-level revenue; and fixed property characteristics for the office, apartment and retail properties in our database. This matches the methodology of Taylor, Rubin and Lynford, but given the availability of a larger panel property-level data over a longer time series, we can exploit new angles.

#### III.A. SEGREGATING ACROSS TIME

Since revenue growth and rent trajectories are subject to business cycles, we segregate the analysis of how much location-specific drivers affect property-level performance by time period. Specifically, we run six separate regression analyses, covering economic booms and subsequent recessions:

1. From 1999 to around the end of 2000, which captures the tech boom.

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2. From 2000 to around 2001 to 2003. The reason for the dispersion around the end point has to do with sector-specific troughs: for most apartment submarkets, recovery for both occupancies and rents commences sooner than for office properties, within the same MSA. This is also metro- and submarket-specific: we adjust the time when the “tech bust ended” depending on when rent growth turned positive — however sluggish.
3. From 2003 to 2004 to anywhere from early to late-2008. This captures the housing boom, when economic growth lifted most sectors, including commercial real estate. Again, the beginning and end points are determined by when submarket fundamentals “turned,” specific to each property type. In hindsight, for example, retail was the canary in the coal mine, with absorption that turned negative in early 2008, well before the crash of Lehman Brothers shifted the Great Recession into high gear. Office properties, on the other hand, did not really experience a large pullback in rents until the start of 2009.
4. From mid- to late-2008 to around 2009 or 2010. This period captures the last recession, which was the most severe contraction in economic activity that the U.S. experienced since the end of World War II. Around 8.4 million jobs were lost and the recession lasted for 18 months, officially ending in June 2009. But national apartment vacancies continued rising to record highs until the end of 2009; office vacancies did not peak until the end of 2010, and shopping center vacancies continued rising until the third quarter of 2011, even though rent growth had already turned mildly positive about a year prior.
5. From 2010 to 2011 to the end of 2015. This captures the ongoing recovery period, characterized by slow GDP growth of approximately 2 percent per year, low interest rates that ended up boosting property values for a select group of buildings that transacted and extreme variability in recovery rates for commercial property, with multifamily recovering very quickly and office and retail continuing to limp along.

A sixth regression is conducted across the entire period from 1999 to 2015 to calculate the overall effect of submarket and metro-level variables on property-level performance.

### III.B. SEGREGATING ACROSS SPACE

The complete panel of property-level performance information<sup>4</sup> is aggregated up, weighted by either units (multifamily) or square feet of rentable space (office and retail), to form submarket and metro-level trends. One additional complication that we considered in this article is the endogeneity<sup>5</sup> of property-level performance and submarket and metro-level trends — papers that simply regress property-level performance on the LHS and submarket and metro-level trends on the RHS are biased towards a positive result — since each property’s performance helps determine what submarket and metro-level aggregated trends look like.

To sidestep this circularity, we recalculate submarket- and metro-level trends excluding each property being studied. This renders the aggregated trend calculation to be slightly different from Reis’ published figures, particularly when we are examining the case of a large property that influences a relatively small submarket delineation’s performance aggregates. This also required significant computing power, since separate regressions needed to be conducted for each subject property relative to submarket-ex-subject and metro-ex-subject. A statistical loop program was written in Stata to run the calculations and summarize the results. Fixed property-specific characteristics like the building’s age, size, total units, unit mix in a specific apartment building, and number of floors for office buildings, were included in the regression to represent property-level drivers of revenue.

Combined with the six time-specific regressions outlined in the preceding section, this approach carefully addresses the central question of, “By how much do submarket-specific drivers affect or determine property-level performance?”

### IV. RESULTS

The regression framework allows us to estimate the marginal effects of market-level, submarket-level, and property-level drivers of revenue, including lagged variables rendering the analysis subject to autocorrelation, but assuming that rent and revenue

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levels in commercial real estate are not correlated over time is equally incorrect. In any case, Durbin Watson statistics appear reasonable and the results quantify the relative weight of metro, submarket and structural property factors in determining property revenue levels.

The results are presented in Table 1 below. Considering the entire time frame from 1999 to 2015 yields a breakdown similar to the Taylor, Rubin and Lynford paper from 2000, with anywhere from 36 to 40 percent of all property revenue variance explained by submarket trends. Property structural characteristics explain an additional 32 to 35 percent, and anywhere from 9 to 17 percent of the variance is left unexplained by the model, relegated to the error term and considered idiosyncratic.<sup>6</sup>

### Submarkets Matter, but Particularly So During Downturns

Partitioning the analysis into discrete time periods that represent economic booms as well as downturns is particularly revealing. Consider the office sector. During the tech boom the proportion of property level revenue explained by submarket trends rose from the “overall” figure of 36 percent encompassing the entire time period to 42 percent: a visually appealing but statistically insignificant difference. But when the tech bubble burst, submarket trends came to dominate the story, accounting for 55 percent of property level declines in revenue. The same pattern was observed during the even more severe downturn from 2008 to 2009. The recession began on December 2007 and ended in June 2009, but national office vacancies did not reach their peak until the third quarter of 2010. During this

**Table 1**  
**Relative Importance of Factors Explaining Property Level Revenue**

<b>OFFICE SECTOR</b>						
Variable	OVERALL	1999-2000	2001-2003	2003-2007	2008-2010	2011-2015
Metro Trends	15%	12%	8%	13%	4%	13%
Submarket Trends	36%	42%	55%	22%	65%	39%
Property Structural Factors	32%	34%	26%	30%	12%	32%
Idiosyncratic	17%	12%	11%	35%	19%	16%
<b>APARTMENT SECTOR</b>						
Variable	OVERALL	1999-2000	2001-2002	2002-2008	2008-2009	2010-2015
Metro Trends	14%	12%	8%	12%	3%	16%
Submarket Trends	37%	42%	52%	39%	72%	36%
Property Structural Factors	32%	34%	23%	31%	10%	30%
Idiosyncratic	17%	12%	17%	18%	15%	18%
<b>RETAIL SECTOR</b>						
Variable	OVERALL	1999-2000	2001-2002	2002-2008	2008-2011	2012-2015
Metro Trends	16%	15%	18%	13%	6%	14%
Submarket Trends	40%	35%	38%	39%	70%	41%
Property Structural Factors	35%	33%	32%	32%	13%	32%
Idiosyncratic	9%	17%	12%	16%	11%	13%

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time, 65 percent of property level performance was determined by submarket drivers. Multifamily and retail properties exhibit similar patterns, with the proportion of property level revenues explained by submarket trends rising to 70 to 72 percent during the Great Recession. The most recent period of recovery, which commenced at different points in time depending on the property type (2010 for apartments, 2011 for office, 2012 for retail), exhibited figures that generally resemble the results for the overall time frame, with submarket trends accounting for 35 to 39 percent of property level revenue variation.

Why might submarket drivers matter more during downturns? There is a large body of literature on shocks, contagion and how asset prices and other measures of performance tend to converge during downturns, as market participants stampede out of risky assets and seek safe havens like U.S. Treasuries.<sup>7</sup> Commercial real estate is apparently not immune to such effects. During the tech bust, Reis data shows that fully leased office buildings located in San Francisco submarkets that suffered from the closure of dot com companies lowered rents by almost as much as neighboring properties in submarkets not dominated by a cluster of tech-related tenants whose vacancy rates shot up.

From these results it seems clear that market-level data is too coarse to use as a proxy for how a property will perform. Where available, analysts should use more disaggregated data like submarket trends when explaining or predicting the performance of a single building or a small group of properties.

### V. BUT DO SUBMARKETS MATTER FOR HIGH-PERFORMING “GLOBAL” CITIES?

Whether the term is “global,” “superstar,” “24-Hour” or “18-Hour” cities, there are a handful of places that stand out because of the way they attract investment, households, and generate employment and output. Hugh F. Kelly (2016)<sup>8</sup> identifies New York, Miami, San Francisco, Washington, D.C., Boston and Chicago as part of this cluster of high-performing cities where vibrant economic activity goes hand in hand with strong property price performance. Would submarkets matter less for a place like New York City, if the rising tide of metro prosperity lifts all boats?

To address this, we segregate the analysis using an indicator variable to separate the effect of being in the “24-Hour city” group above. If submarkets matter less, the relative effects presented in Table 1 should decline for “submarket trends.” An interesting trend emerges.

**Table 2**  
**Submarkets Matter for High-Performing Cities**

OFFICE SECTOR						
Variable	OVERALL	1999-2000	2001-2003	2003-2007	2008-2010	2011-2015
Metro Trends	7%	5%	7%	9%	3%	8%
Submarket Trends	38%	44%	58%	19%	67%	40%
Property Structural Factors	31%	32%	23%	28%	13%	32%
24-Hour City   Not	14%	8%	4%	22%	7%	12%
Idiosyncratic	10%	11%	8%	22%	10%	8%
APARTMENT SECTOR						
Variable	OVERALL	1999-2000	2001-2002	2002-2008	2008-2009	2010-2015
Metro Trends	6%	4%	6%	10%	4%	7%
Submarket Trends	37%	44%	55%	38%	74%	38%
Property Structural Factors	32%	29%	22%	28%	11%	26%
24-Hour City   Not	11%	12%	10%	12%	5%	10%
Idiosyncratic	14%	11%	7%	12%	6%	19%

Note: We exclude retail from this analysis because Reis does not track standalone retail properties in New York and Washington, D.C. – of which there are admittedly few.

## In the Age of Global Cities, Submarkets Still Matter

Separating the analysis across high-performing cities does not diminish the importance of submarket factors in determining property performance. Submarket trends retain their significant impact, particularly during downturns. The explanatory power of metro-level trends did decline, but it is likely that designations of being a high-performing “global” city is correlated with metro trends, reducing the latter’s impact.

It is perhaps not so surprising that what drives high performance cities are high performance neighborhoods. During downturns, the resilience of specific neighborhoods and submarkets in these high performance cities really help bolster the performance of properties located within. Consider how properties in the Queens submarket of New York City performed in the last downturn. New York was arguably the epicenter of the financial services meltdown of late 2008 that lasted through 2009 — but apartment properties in the Queens submarket actually had asking and effective rents rise, on average, by 1.4 percent and 1.2 percent, respectively. Regardless of whether vacancies were on the high or low side of the submarket average of 2.1 percent, a large majority of properties in Queens were able to raise rents during a time of major upheaval — because the submarket itself was benefiting from an exodus of households from more expensive parts of Manhattan;<sup>9</sup> households that could no longer afford premium rents but who still wanted to live within the five borough area, within walking distance of New York City’s famed subway system.

### VI. SUMMARY AND FUTURE RESEARCH

Location therefore does seem to matter for property performance — which is in line with the intuition of market participants and investment managers. Even in the age of 24-hour cities benefiting from global capital flow and a mobile, connected workforce, submarkets still matter.

This suggests that the use of granular data is superior to more aggregated trends. But this begs the question of whether tracking the performance of a narrowly defined group of comparable properties is even better than using submarket data when it comes to explaining and predicting the performance of a single building. Theoretically this seems to make sense, and much effort is expended by industry analysts defining their “comp group” appropriately, against which they benchmark the performance of their subject property.

The argument against going “too granular” for forecasting purposes is that one may encounter higher levels of idiosyncratic variability that submarket aggregations will tend to smooth out; if a comp group of ten is better than using the entire submarket, it does not follow that a comp group of one is superior.

But would submarkets matter as much if you were the marquee property in the neighborhood? Consider a small submarket with a single, large multitenant office property housing a major employer located right in the center; a set of smaller buildings surrounds the large property, forming the submarket. During downturns, the large office building may in fact withstand submarket trends better than the smaller properties. Conversely, suppose the large office building loses its anchor tenant during relatively calm economic times, forcing it to lower rents significantly. This is presumably one case when a rather large tail will wag the entire dog, compelling the smaller properties to lower rents as well even without the pressure of a recession. We control for this somewhat by our exclusion procedure outlined in Section III.B, but further study appears warranted.

Future research papers will investigate these questions. ■

# In the Age of Global Cities, Submarkets Still Matter

## ENDNOTES

1. Taylor, M., Rubin, G., and Lynford, L. *Submarkets Matter! Applying Market Information to Asset-Specific Decisions*. Real Estate Finance, Fall 2000, pp. 7-26.
2. Capozza, D. and Helsley, B. *The Stochastic City*. Journal of Urban Economics, 28(1990), pp. 187-203.
3. Supra
4. On an ongoing basis, Reis surveys and receives data downloads from building owners, leasing agents and managers which include key building performance statistics including, among others: Occupancy rates; rents; rent discounts and other concessions; tenant improvement allowances; lease terms; and operating expenses.
5. Endogeneity in regression analysis refers to a situation where the predicted variable affects independent variables; the “left hand side” affects the “right hand side” so the explanatory variables are not really independent.
6. Idiosyncratic in this context refers to what remains unexplained by the overall analytical framework.
7. For a classic summary, refer to Charles Kindleberger's *Manias, Panics and Crashes: A History of Financial Crises*.
8. Kelly, Hugh F. *24-Hour Cities: Real investment performance, not just promises*. Routledge, New York: April 2016.
9. For comparison, effective rents fell by anywhere from 1.1 percent (Bronx County) to 11.3 percent (Upper West Side) for other New York City submarkets. The amount of decline in effective rents appears correlated to relative rent levels, with more expensive neighborhoods taking a bigger hit. Kings County – Brooklyn – had effective rents decline by 3.3 percent, but the submarket had by that time become relatively expensive given the surge in property prices and rents in newly gentrified areas like the DUMBO neighborhood.

# It's a "Small World"...with Big Economic Challenges

BY K.C. CONWAY, CRE

ONE NEED ONLY REFLECT UPON THE HEADLINES of late regarding Brexit, Trans-Pacific-Partnership (TPP), Hanjin shipping bankruptcy, and slowing GDP growth to realize that all is not harmonious in the global economy. The common threads that run through these headlines — as well as other noteworthy current events, such as the Syrian refugee crisis and U.S. “secure the border” movement front and center during the 2016 U.S. Presidential campaign — are twofold:

- i. **Unresolved post WWII reconstruction monetary, political, and trade policies** exacerbated by conflict between the dominant 20<sup>th</sup> Century industrialized nations (G7) and 21<sup>st</sup> Century, Emerging Market economies with greater populations. These Emerging Market economies are demanding more influence over currency, labor and trade matters — and the organizations that determine their outcomes;
- ii. **Disruptive technologies** that are effectively reducing demand for labor. In essence, these technologies are fueling isolation behaviors that underlie Brexit, anti-TPP sentiment and anti-immigration policies across Europe, North America and Latin America. Left unaddressed, more volatility and conflict is ahead that serves to only inhibit economic and GDP growth for all.

Neither of the aforementioned are easy challenges to tackle, yet alone solve. We can't put the genie back in the bottle in terms of global interconnectivity or advancing disruptive technologies such as robotics, 3-D Print manufacturing and driverless vehicles. Today's global economy is at an inflection point not dissimilar to that experienced at the onset of the industrial age or end of World War II requiring

## About the Author



K.C. Conway, CRE, is a Sr. VP - Credit Risk Management, with responsibilities for REVAL (Real Estate Valuation and Environmental Services) and Market Intelligence. He has 30 years experience as an appraiser, underwriter, lender, credit officer and economist. Noteworthy recent roles prior to joining SunTrust Bank include: i) Chief Economist for Colliers | U.S. (2010-2014); ii)

Commercial Real Estate Risk Specialty Officer — NY Federal Reserve Bank (2009-2010); iii) Commercial Real Estate Subject Matter Expert — Atlanta FED (2005-2009); iv) and Director of Underwriting — legacy SouthTrust Bank (1995-2005). Mr. Conway is also a frequent lecturer and speaker on commercial real estate markets and valuation matters for government agencies, financial institutions, and private industry groups. Over the past 5 years he has addressed approximately 350 real estate industry conferences, including the Appraisal Institute, American Property Tax Council, The Counselors of Real Estate, FDIC, FFIEC, IPT, NAHB, National Association of Realtors, NAIOP, SIOR, Society of CPAs and ULI.

massive reconstruction in Europe to rebuild a sustainable peace. The question that needs to be answered in advance of another period of isolationism that will inevitably lead to another world war type conflict is: How do nations collaborate and reconstruct a new model that promotes growth beyond today's narrow band of industrialized nations? **In essence, what is the modern-day Marshall Plan (European Recovery Plan) for a 21<sup>st</sup> Century Disruptive Technologies era (think of it as an “Emerging Markets Economic Participation Plan”)?**

Let's first put in perspective the disparity in global economic growth. In Table 1 from *tradingeconomics.com* (one of my top five

## It's a "Small World"...with Big Economic Challenges

recommended economic sources) highlights the economic disparity.

When one then compares the population statistics to the GDP rankings, the economic bifurcation is quite stark. Table 2, also from *tradingeconomics.com* highlights this economic-to-population disparity. Not only does it feel like just a few geographies control the economic equation and fate of global GDP, the control over the elements that drive this disparity also reside in the control of the few dominant post WWII industrialized nations — and not the emerging nations with population masses. The control elements include, but are not limited to:

- i. Primary financial markets — London and New York located in the two geographies with most GDP;
- ii. Monetary Policy Leader — Federal Reserve Bank of the United States (Top-ranked country in GDP);
- iii. Trading organizations such as the G8; and
- iv. Banking — not just the dominant U.S. and European ones but the World Bank as well. This control of so many of the ingredients that determine the economic pie by a few is a recipe for conflict and economic instability. And that is what we are seeing play out in response throughout Asia, the Middle East, and Europe.

**Table 1**

Countries	GDP (In Billion)	GDP YoY	GDP QoQ
United States	17947	1.50%	2.90%
Euro Area	11540	1.60%	0.30%
China <b>3&gt; \$10tr</b>	10866	6.70%	1.80%
Japan	4123	0.80%	0.20%
Germany	3356	3.10%	0.40%
United Kingdom	2849	2.30%	0.50%
France	2422	1.10%	0.20%
India <b>8&gt; \$2.0tr</b>	2074	7.10%	1.40%
Italy	1815	0.80%	0.00%
Brazil	1775	-3.80%	-0.60%
Canada <b>10&gt; \$1.5tr</b>	1551	0.90%	-0.40%

Source: [tradingeconomics.com](http://tradingeconomics.com)

- There are only three economies with a GDP in excess of \$10 trillion annually (U.S., European Union and China)
- There are only eight economies with a GDP in excess of \$2.0 trillion. Six of those only have annual GDP between \$2.1 and \$4.1 trillion.
- Only ten countries across all continents have an economy with annual GDP of at least \$1.5 trillion.

The bifurcation between the industrialized economies in the West and the emerging economies is growing worse. Compare these GDP figures to population statistics.

**Table 2**

Country	Population in Million	Year	▼▲
China <b>#1 in Pop; #3 in GDP</b>	1374.62	Dec/15	▲
India	1254.02	Dec/15	▲
Euro Area	338.47	Dec/15	▲
United States <b>#4 in Pop; #1 in GDP</b>	321.57	Dec/15	▲
Indonesia	255.46	Dec/15	▲
Brazil	204.45	Dec/15	▲
Russia	146.3	Dec/15	▲
Japan	126.82	Dec/15	▼
Mexico <b>#9 in Pop; &lt; top 10 in GDP</b>	121.01	Dec/15	▲
Germany	82.18	Dec/15	▲
France	66.63	Dec/15	▲
United Kingdom	64.88	Dec/15	▲
Italy	60.8	Dec/15	▲
South Korea	50.6	Dec/15	▲

Source: [tradingeconomics.com](http://tradingeconomics.com)

In contrast to the previous GDP profile, the world's largest population resides in just two countries (China and India) that totals more than the next dozen geographies including the U.S., Europe, Japan, Russia and South Korea.

This kind of economic disparity can't remain unaddressed without instability — like what we see today between Russia and Europe, China and the U.S. — and on the Korea Peninsula.

In the adjacent Population table, the U.S. and Europe rank #1 and #4 in GDP yet account for less than half the population of India or approximately 25 percent of the population of China and India combined.

And then consider Mexico with a population among the top 10 globally, but not even in the top ten with regard to GDP.

If we strive for a global economy with less conflict and expanded trade, this economic and population disparity has to be addressed. Trade Agreements like TPP or expanded membership in the World Bank are bandages masking a more serious wound.

## It's a "Small World"...with Big Economic Challenges

So what is the answer to this first challenge? Maybe the commercial real estate professionals can determine that; however I will proffer that the answer has to start with a recognition of the following:

- **Leadership is lacking on the global stage.** Brexit was a wake-up call this past Summer. And now the UK "Supreme Court" has ruled that the UK cannot proceed with initiating the people's desire to divorce from the European Union until Parliament approves the decision. I kid you not. Refer to the following coverage of the UK court ruling during the first week of November 2016. Could this be fortuitous to future U.S. Supreme court rulings on matters of trade, post new judicial appointments in 2017 under a new U.S. President? Are we on the verge of a new era of isolation?
- **The 2016 U.S. Presidential campaign has also served as an eye-opener for the isolation thinking and anti-trade sentiment from the middle-class that blame trade agreements like NAFTA, versus disruptive technologies in manufacturing resulting in most of the middle-class job loss in the U.S. A redo of NAFTA or TPP won't bring those jobs back. The robots have them now.**
- **And the leadership challenges become more severe in 2017 and 2018** when FED Chair Janet Yellen and her ZIRPTI monetary policy (zero interest rate policy to infinity) are up for reappointment; and Germany's Chancellor Angela Merkel faces her own re-election challenge as head of Europe's largest economy amid growing discontent over her refugee policy — a re-election that is shaping up to be "Brexit the sequel."
- **The World Bank and post WWII reconstruction structures/organizations have served their purpose and need to be rethought to address the need for a new type of Marshall Plan — an "Emerging Markets Participation Plan."** The World Bank has morphed from a single-institution entity post the end of WWII with a single mission to reconstruct Europe to a bureaucratic 189-member institution with a primary focus to eradicate poverty. This mission, while laudable, looks, feels and sounds

like "wealth redistribution" to industrialized nations like the U.S. Import/Export Banks is undermined by currency manipulation and monetary hanky-panky that originated with the U.S. Federal Reserve long before China learned the behavior. When one nation's currency sets the price of the world's most needed commodities (oil to soybeans), emerging markets don't stand a fighting chance when that nation wants to advance its economic growth at the expense of other nations. The ZIRPTI by the U.S. Federal Reserve, in response to the 2009 Financial Crisis, has been exported to Europe and Asia — and now we face a race to currency devaluation without understanding the unintended economic consequences.

- **The U.S. Dollar as the world's reserve currency is at real risk from cryptocurrency.** The U.S. and EU monetary policy behavior is driving global interest in a substitute reserve currency and cryptocurrencies like Bitcoin and BitMint. What are the implications for commodity prices like oil and agriculture that are principally priced using the U.S. Dollar? **Don't be so quick to dismiss the cryptocurrency movement by the emerging market economies. Cryptocurrency is viewed as a way to neutralize currency manipulation and disruptive monetary policy by the U.S. and EU.** The emerging markets will use cryptocurrency technology to displace a single-country reserve currency (the U.S. Dollar) in the next decade. A review of the top-trending cryptocurrency news stories as of the first week of November 2016 revealed that even the UK bank regulator is studying the implications.

The top five cryptocurrencies in circulation today represent a market capitalization that has grown to approximately \$12.2 trillion U.S. Dollars — or 2/3 of U.S. annual GDP. Cryptocurrencies are no longer eclectic or theoretical. They are real and increasingly utilized by emerging economies to conduct trade due to their trade imbalances with the U.S. and Europe. Trade deficits could be eradicated by global use of cryptocurrency. Then what influence will central banks have on economic activity?

## It's a "Small World"...with Big Economic Challenges

**Table 3**  
**Cryptocurrency Market Capitalization**

Name	Market Cap	Price	Available Supply
Bitcoin	\$11,280,506,281	\$706.62	15,964,080 BTC
Ethereum	\$931,409,949	\$10.86	85,746,239 ETH
Ripple	\$290,168,602	\$0.008139	35,649,569,539 XRP
Litecoin	\$185,883,098	\$3.85	48,338,954 LTC
Ethereum Classic	\$80,910,280	\$0.944665	85,649,707 ETC

Source: <https://coinmarketcap.com>

Any doubt remaining that these two primary problems are not going to be easily resolved? With challenge #1 in perspective, let's turn to the second big global economic challenge: **Disruptive Technologies**.

**Disruptive Technology:** The dirty little secret and dialogue that politicians don't want to have with manufacturing and middle-class labor is that automation, robotics and technology are eliminating labor across all industries and countries — and at a pace that surpasses job loss from any legacy trade agreement. White-collar employment in architectural design, engineering, financial services, legal and medical industries are all under siege as much as manufacturing and transportation industries experienced in the 1970s, 1980s and 1990s, but this time from technological advances that can perform analytical, design, and even diagnostic functions cheaper, faster and more consistently than human labor. As industry faces skilled labor shortages, rising wage pressures, and the need to pay for double-digit increases in costs like medical care, employers are turning to technology to solve the problem.

Banks are adopting mobile device technology to replace the teller function and traditional branch banks. Government agencies are deploying self-service kiosks to enhance customer service and improve efficiency. Healthcare and retail are adopting the kiosk technology to control costs and enhance delivery of services. It's not just ATMs, automated parking attendants or vending services dominating the kiosk revolution.

**Kiosk Marketplace** reports on the growth of the kiosk industry, and projects more than 10.9 percent annual growth of kiosk delivered services between 2016 and 2024.<sup>1</sup> It reported in October of 2016 that retail and healthcare are the two major kiosk applications in North America, with retail

**emerging as the dominant and the fastest growing sector.<sup>2</sup>** Within retail, the use of kiosks for bill payment emerged as the largest sub-segment in 2015 (in other words elimination of the checkout labor that used to employ students, part-time laborers and lesser skilled workers). And within healthcare, the use of kiosks for hospital information is displacing the front office clerical staff in hospitals and doctors' offices. So what is to become of this displaced labor?

And the challenges just get greater when one starts to layer in 3-D print manufacturing, logistics technology that is remaking the supply chain and need for warehouse workers who are being replaced by robotic forklifts and automated conveyor systems to read, handle and direct packages from shipping container to delivery truck. And what about driverless vehicle technology that is already in testing by retailers such as Wal-Mart or shipping companies testing drone shipping vessels being developed by Rolls Royce?

Even China understands that industry no longer has to chase cheap labor around the world and it too must contain rising labor costs. Mexico now has a wage rate 20 percent below that of Asia's and China is responding by becoming the world's largest purchaser of robots to replace workers. The International Federation of Robotics tracks the data on robot purchases. In its latest report covering CY 2015 global robotic purchases, it reported the following:

In 2015, robot sales increased by 15 percent to 253,748 units, again by far the highest level ever recorded for one year. The main driver of the growth in 2015 was the general industry with an increase of 33 percent compared to 2014, in particular the electronics industry (+41 percent), metal industry (+39 percent),

## It's a "Small World"...with Big Economic Challenges

the plastics and rubber industry (+16 percent). The robot sales in the automotive industry only moderately increased in 2015 after a five year period of continued considerable increase. China has significantly expanded its leading position as the biggest market with a share of 27 percent of the total supply in 2015.<sup>3</sup>

### CONCLUSION

Each generation faces a different global landscape and set of economic challenges. At the onset of the Industrial Age in the mid-18<sup>th</sup> Century, Great Britain wrestled with what an economy would look like with power tools instead of hand tools. Eventually, all adapted and the world economy expanded at historic rates of growth. Post World War II, the U.S. wondered how it would absorb returning GIs into an economy that was no longer fueled by wartime manufacturing. By 1950 the U.S. economy reached a record annual GDP growth rate of nearly 17 percent. Europe wondered if it had a fate in the aftermath of WWII with so much destruction. Who would rebuild it? During the energy crisis of the 1970s and rampant inflation that saw the Prime Lending Rate rise to 21 percent by 1981, America and Europe struggled with unimaginable inflation and an uncertain future dependent on Middle East and OPEC oil. By 1987, the world evidenced a collapse in energy prices and quickly abandoned concerns about economic growth without cheap oil. In 2009 the world evidenced the "Great Recession" and assumed a repeat of the Great Depression was inevitable. Less than a decade later many seem to have forgotten the "Great Recession" and have replaced the angst over our banking system with a new found form of isolation fueled by the unknown of terrorism and ISIS. A void in global

leadership exists, and that void, combined with a fear of what disruptive technologies mean for all kinds of industries across all continents, is our new global economic challenge. **We are a small world with big economic challenges, but they are not insurmountable.** In the words of Franklin Roosevelt, "the only thing we have to fear is fear itself."

**Leadership can develop a new Marshall-type Plan to promote an "Emerging Markets Economic Participation Plan" to keep peace amidst renewed cries for isolationism.** Disruptive technologies will eliminate some types of jobs but other employment and career opportunities will emerge like they did during the Industrial Age. A quick tour of *Monster.com* will reveal job categories that didn't exist just 5 years ago for Drone Pilot instructors, 3-D CAD analysts, etc. On the eve of the U.S. Presidential election, UK Supreme court ruling the "people's Brexit vote is invalid without Parliament's approval," anti-TPP sentiment for fear of another NAFTA job killing trade agreement, and growing anti-immigration sentiment across both Europe and North America, **the greatest threat to the global economy is fear.** A return to 3 percent global GDP growth will not ensue until we develop a modern day Marshall Plan to address the imbalance in emerging market economic participation and how to redeploy less skilled labor displaced by "Disruptive Technology." ■

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### ENDNOTES

1. See Report at: <https://www.kioskmarketplace.com/news/report-kiosk-market-to-expand-rapidly-through-2024/> (Accessed March 8, 2017).
2. See: <http://www.transparencymarketresearch.com/north-america-kiosk-market.html> (Accessed March 8, 2017).
3. See Report: <http://www.iifr.org/industrial-robots/statistics/> (Accessed March 8, 2017).

# Challenges and Opportunities Facing the Future of our Cities

BY GEORGE T. VALLONE, CRE

I MET MY BUSINESS PARTNER DAN GANS IN 1972 when we were both freshman at Gettysburg College. One year after graduating, we decided to start a development business together. After studying the entire New York Metropolitan area for three years as we completed our post-graduate studies, we came to the conclusion that Hoboken would be the best place to start.

The selection criteria that we used in deciding where to start our redevelopment business mirrors the criteria that developers around the world consider in their site selection process. It's no secret that the primary driver of value in real estate is directly linked to location. Lifestyle and housing preference decisions follow a selection process which drives market demand. Consequently, understanding those market preferences leads directly to the highest value locations.

We elected to begin our career in the city of Hoboken, New Jersey. In our specific case we picked Hoboken because of its location on the Hudson River directly across from Manhattan Island in New York City, and it met all of our other selection criteria. It had a large inventory of 100 to 150 year-old, very well-built brownstones and brick row houses. These buildings were in disrepair and were available at very low prices due to the evaporation of middle class workers whose port related and manufacturing employers in these industries closed down and moved elsewhere. The middle class simply moved out leaving many homes for sale with few buyers. These buildings were well-suited for high-end renovation and sale as condominiums. Additionally, Hoboken and Jersey City were transit rich locations. They both had mass transit access to one of the largest employment centers in the country (New York City) via subway, bus and ferries. It also had automobile access into Midtown and downtown Manhattan through the Lincoln and Holland Tunnels. Both cities also had significant

## About the Author



**George T. Vallone, CRE**, is President of *The Hoboken Brownstone Company (HBCo)* — a multi-faceted real estate development firm active along New Jersey's Hudson River "Gold Coast." Mr. Vallone is President of the New Jersey Builder's Association (NJBA) and Chairmen of NJBA's Mixed-Use Developers Affiliate ("MXD"). The members of MXD are responsible for the construction of more than 75 percent of all rental housing built in N.J. For 10 years he served as President and Vice Chairman of the Board of Our House, Inc., a non-profit group that builds, owns and operates over 30 group homes and provides job training for 120 developmentally disabled adults and individuals with mental health, substance abuse and criminal backgrounds. He also served on the Board of YCS — Youth Counseling Services, Inc. — a \$70M non-profit whose mission is to serve children at risk all over N.J.

Mr. Vallone possesses a BA in Accounting from Gettysburg College and an MBA in International Finance from Fordham University. He has been a licensed N.J. Real Estate Broker and is a Counselor of Real Estate. He has guest lectured at NYU, MIT, and taught a Real Estate Finance and Risk Management course at the Rutgers Graduate School of Business, the N.J. Redevelopment Agency's Edison Institute, the Rutgers Cook College Continuing Education Series, and at the N.J. Bar Association's Institute for Continuing Legal Education. He also lectures extensively around the country on numerous real estate topics involving creative finance, joint venturing with land owners, structured seller financed land development, risk management, green building, and brownfield redevelopment topics.

employment generators within their borders as they were home to several academic institutions, hospitals, and hundreds of small commercial, retail and dining and drinking establishments.

We purchased a four-story, brick row house as our first development project on Third Street in Hoboken in 1979. We picked it because the price was a very reasonable \$20,000, it was two blocks from Washington Avenue (Hoboken's Main Street) and it was a five minute walk to the PATH transportation center. In one year, we completely renovated it and

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converted it into four condominiums.

We sold the upper three units and kept the ground floor unit for the two of us to live in and for our first office. We continued with larger and larger projects including the construction of a 100 unit high-rise condominium in 1985 simultaneous with the restoration of an adjacent 1905 bank building which was listed on the National Historic Register, earning us a 25 percent tax credit which helped to shelter the condominiums profits.

To keep with large scale projects, we became involved with brownfield redevelopment on the Hoboken waterfront and downtown Jersey City. Brownfield redevelopment involves cleaning up contaminated industrial sites and repurposing them into mixed-use developments such as: multifamily, retail, parking and parks.

In the late 70s, 80s and 90s our condominium buyers were the “Baby Boomers,” referred to back then as “Yuppies” — Young Upwardly-mobile Professionals, and their children, referred to as “Gen X.” As the Boomers moved into their late 20s and early 30s they began forming families and many left our market in search of the suburban lifestyle: a single-family house with a yard, two-car garages and a swing set. A generation later, that same demand for the urban lifestyle is being driven by the Gen X and the Millennial generations. Further fueling demand for housing in redeveloping urban areas is the fact that over the last 10 years the middle aged Baby Boomers, who are en-mass becoming empty-nesters, are retiring and returning to the urban lifestyle of their Yuppie youth. Empty nesters are now combining with Gen X and the Millennials to fuel the demand for luxury rental apartments and condominiums on the New Jersey side of the Hudson River. The exact same housing trend is being seen energizing many older neighborhoods and industrial areas along the Brooklyn and Queens waterfronts on the East River side of Manhattan. Nationally, the Baby Boomers, Gen X and Millennials are a 215,000,000 strong market (67 percent of the 319 million U.S. population). The percentage of this market that prefers a place to live where job centers, culture, active and passive recreation, dining, drinking and shopping are all interwoven in pedestrian friendly neighborhoods that are accessible to regional mass transit is clearly up-trending. This mega-trend toward urban living is happening all over the United States and in many

of the world’s post-industrial waterfront cities.

While the demand for urban life is growing, urban brownfield redevelopment certainly has its many challenges and problems.

One of the major challenges of urban redevelopment results generally from problems caused by a policy clash between legislators passing unprioritized legislation which promotes well intended but conflicting objectives. An example of such conflicting objectives would be incentivizing urban redevelopment versus creating jobs for unionized construction workers. Both of these policies have a high priority which forces legislators to try and accomplish both and use legislation to connect them. In New Jersey, local financing subsidies like real estate tax abatements and PILOTS (Payments in Lieu of Taxes), which have the intention of fostering redevelopment of former industrial areas, typically come with a prevailing wage (union) requirement, thus diluting the beneficial impact of the incentive by about 30 percent to those who use it and sometimes discourage potential new entrants to the market. Similarly, New Jersey’s Brownfield Reimbursement Program, whose objective is to incentivize the remediation and redevelopment of historically environmentally impacted industrial property, also comes with the prevailing wage requirement. By failing to prioritize policies and using legislation to attempt to accomplish conflicting objectives, you end up achieving less of both of the objectives.

Another significant challenge urban redevelopment faces is the availability of affordable workforce housing in up-and-coming neighborhoods. As redevelopment in our inner cities accelerates and existing property values escalate, the incentive for the private sector to preserve affordable housing diminishes.

Affordable housing policies often clash with redevelopment policy when the cost of building new affordable housing is placed on the development community without an offsetting compensating incentive like density bonuses, property tax relief or expedited approvals and permitting. Another challenge that is bias is often referred to as the “NIMBY” (Not In My Back Yard) mentality. This bias is well documented in suburban and rural communities: it is now beginning to show up in urban areas where residents of “high-end

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neighborhoods” do not want to preserve the existing affordable housing stock or admit new affordable housing into their midst because that will introduce a “bad element” of the population into their otherwise upscale neighborhoods.

Producing new affordable housing traditionally has only been accomplished through government incentives, like low-cost financing, vouchers (like the HUD Section 8 voucher program), and 4 percent and 9 percent Low Income Housing Tax Credits which are in short supply. Additionally, some become an annuitized and increasing burden on the private tax-paying sector over time.

Land use policies in America’s oldest cities evolved over the last hundred and fifty years. Originally they were designed to be more and more restrictive in order to solve (control) the many major problems that became endemic in many of the northern cities, as their populations began to explode after the Civil War. The original well-intended purpose of land use laws was to reduce density to solve the horrific conditions in cities caused by overcrowding and the consequent problems of fires from unsafe construction practices, sanitation, crime, and the industrial pollution caused by the necessity of factories being located next to where people lived. For the most part, over the last 50 years, these health and safety conditions no longer exist. The solutions to these historic problems; however, have not caused a commensurate change in land use policy. Those now-outdated restrictions should be reduced and growth and densities encouraged in appropriate locations. With modern sewer, water and mass-transit systems in urban areas and the increasing deindustrialization of our cities as we move from a manufacturing to an information based economy; cities should be allowed to grow without these outdated restrictions. In fact, the most successful cities have their employment buildings in close proximity to where people live. Walkability to mass transit and jobs is the new amenity.

Exacerbating the problem of efficient land use in New Jersey is that zoning is done at the local rather than the municipal level. “Home rule,” as the locals like to call it, has resulted in 537 municipalities each deciding how much and where they will allow growth to occur with absolutely no concern about the effect of this growth, or lack thereof, on neighboring

municipalities or the regional economy. This bottom-up planning model creates an imbalance between the social benefit of growth and the private costs that growth sometimes imposes. The solution is top-down planning where long-term growth can be anticipated, future infrastructure requirements can be budgeted and planned for, and the creation of low density low-cost affordable housing and public open spaces can be balanced and offset by high-density high-cost housing. Resistance to top-down planning is also often exacerbated by urban landowners attempting to preserve local zoning power to artificially inflate the value of their assets by restricting the supply of additional product on the market.

Rebuilding infrastructure is another challenge facing our older urban areas. Although much of the infrastructure that exists was capable of handling much larger populations from the peak industrial levels of our past, the infrastructure is aged. We still discover wood and brick sewers when we open up the streets for water, sewer and power connections, and we still have combined stormwater and sanitary flows running through the same pipes in most of our older cities. During recent severe storm events, most municipal sewage treatment facilities were overwhelmed by the surge of storm water which had nowhere to go so it backed up onto the streets causing widespread flooding. Major portions of Hoboken and downtown Jersey City were under four to five feet of water that caused hundreds of millions of dollars in property damage.

These combined systems are in need of redesign, separation and rebuilding. Financing the rebuilding of our infrastructure can be a very simple matter if the cities are willing to accept taller buildings and increased densities. By making additional density in taller buildings available in redevelopment areas for a price, infrastructure funding can be created quite literally from thin air. One of the density bonus plans we worked on in Jersey City, N.J., would have allowed 40+ story buildings instead of the 20 story buildings currently permitted and would have added 2,000 additional units to a neighborhood which, at an average market price for land per residential unit of \$50,000, would have generated \$100 million which could have been used for public purposes like infrastructure financing, affordable housing, open

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space, and mass transit improvements. Solutions like these exist but require political leadership.

Notwithstanding these challenges, there are far greater opportunities in redeveloping post-industrial cities like Hoboken and Jersey City.

Most of the local political and bureaucratic officials we deal with have a pro-development attitude. Developers who know how to work together with the community stakeholder groups and the city are in great demand. They know that working together during the planning process ensures faster approvals and projects that result in more profitability for the developer and more benefits for the host community. There are a significant number of large tracts of river front and river view property, originally all exclusively occupied by industry that became vacant and available for redevelopment. Active railroad right-of-ways that traversed and connected the cities from their waterfront factories and warehouses to their markets inland are now used by passenger rail. Sixteen years ago, New Jersey Transit invested \$1.5 billion into the Hudson Bergen Light Rail Train (HBLRT) using the newer and less expensive light rail technologies. The HBLRT's 23 station stops running along 34 miles of the New Jersey Hudson River waterfront provide easy access for 54,000 people per day commuting up and down the Hudson River waterfront to local employment centers and for connecting to the ferry and PATH subway systems into Manhattan.<sup>1</sup> As a result of that infrastructure investment, private developers have constructed approximately \$30 billion of private investment surrounding these station stops.

Another opportunity exists because of inactive and abandoned railroad right-of-ways being converted to linear parks that also function as pedestrian walkways and bike paths; i.e., "Rails to Trails." Rails to Trails projects like Manhattan's 1.5 mile long "High Line" have proven the popularity of these walkways and demonstrated the value-add benefits to adjacent property owners who now have high foot-traffic retail space on their upper floors which align with and have frontage along this linear park. On a larger scale, the "East Coast Greenway" is planned and sections are getting built that will ultimately take hikers and bikers on a 3,000 mile path along abandoned and repurposed railroad right of ways stretching all the way from Calais, Maine, on the Canadian border to Key West, Florida.<sup>2</sup>

In the very near future, we will begin to see a reduction in the traffic congestion in urban areas. This has long been an excuse to prevent more development. Already, disruptive transportation technologies like Uber, Lyft, Zipcars and Citi Bikes are dramatically reducing the need to own an automobile in urban areas. In the near future, driverless cars will take over our urban roadways. You will be able to order a car which will pick you up at your doorstep, take you to your destination, then come back and pick you up when you're finished and return you to your point of origin. No one will need to own a car anymore. This is why the big three automakers are paying very close attention to the Teslas and the Google self-propelled automobiles that are on the verge of widespread adoption. You can see a telltale sign of that attention as GM recently invested \$500 million in Uber's competitor Lyft.<sup>3</sup> Parking lot and car-garage owners and automobile insurance companies will feel this disruption first. Parking lot and car-garage owners, whose facilities are typically located near employment centers or near transit portals to employment centers will be able to convert them to housing and greatly increase their value but the automobile insurance companies will not fare as well.

Our experience over 37 years of urban redevelopment has convinced us that although the challenges are great, the opportunities are even greater. The development community has always been vigilant in tracking demographic changes and their implications on the site selection process. Forward thinking developers realize the way to create successful developments is by focusing on the triple bottom line: societal, environmental and economic. In our role as real estate professionals, it is incumbent on us to continue to educate all of the disparate stakeholders within the legislative, policymaking, regulatory and development communities on the importance of harmony. By working together with our legislators to address the challenges of prioritizing redevelopment policy we can focus the power of public land use controls and incentives to create private sector financing for affordable housing, to rebuild our aging infrastructure, and to provide the necessary amenities for a quality urban lifestyle. Only through this type of political awareness and redirection will we create the best cities of the future. ■

## Challenges and Opportunities Facing the Future of our Cities

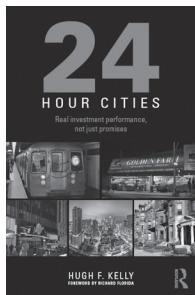
### ENDNOTES

1. See: [www.nytransit.com](http://www.nytransit.com).
2. See: [www.greenway.org](http://www.greenway.org).
3. See: <https://www.bloomberg.com/news/articles/2016-01-04/gm-invests-500-million-in-lyft-to-bolster-alliance-against-uber>. Accessed March 2, 2017.

# 24-Hour Cities: Real investment performance, not just promises

By Hugh F. Kelly, Ph.D., CRE (© 2016, Routledge, 326 Pages)

REVIEWED BY PETER C. BURLEY, CRE, FRICS



HUGH KELLY REMINDS US IN MORE than one place in *24 Hour Cities* that “a list of ingredients does not constitute a recipe.” In his book, Kelly offers us a full-flavored, sit-down, multi-course meal of form and function, detail and design, ebb and flow, success and failure of the American urban environment.

This is no Country Buffet, with a sampling of this ‘n’ that. It is a rather sumptuous, gourmet offering, beginning with an appetizer of colorful, charming vignettes of his own (obviously personally beloved) Brooklyn neighborhood, and moving through an orderly, exhaustive presentation of the American city in its historically best — and arguably some of its worst — forms.

It is difficult in a brief review of Kelly’s book to fully cover the extensive literature review he undertakes in describing and discussing the American city. It is thorough and thought-provoking. While drawing on the deeper history of the city, his real story begins in the 1950s with (some pre- but mostly post-war) policies, technological innovations, and a host of forces — demographic, political, economic, and otherwise — that have shaped the modern U.S. city. Drawing on some old favorites of my own, including Hoyt, Muth, Alonso, and Mills, among others in planning and urban studies literature, Kelly is able to point to the complexity of the urban organism, its evolution, growth (and often decline) in the mid-to-late 20<sup>th</sup> century. In some cases by design, as in planning policies that have determined specific land uses, and in others, misplaced priorities, as in transportation development or “urban renewal,” Kelly moves us from the early functional urban agglomeration to the later “hollowing out” of the urban core in favor of the suburban fringe. In the case of certain 24-hour cities, he cites reemergence of the central city as a place of residential, commercial

## About the Author



Peter C. Burley, CRE, FRICS, is a leading real estate market and economics research professional with extensive executive experience building and managing strategic research platforms for the real estate industry. Peter is recognized for his analyses of national and regional economic, demographic, industry and property market trends across all property types and for his development of real estate portfolio investment strategies.

As the founding director of the Richard J. Rosenthal Center for Real Estate Studies at the National Association of REALTORS, in Chicago, Peter set the strategic direction of the Center, and managed the execution of academic and professional research on major issues, opportunities, and challenges in the real estate industry. He created, edited and published the Journal of the Center for Real Estate Studies and directed research on a variety of critical topic areas.

Prior to founding the Rosenthal Center, Peter was Vice President of Market Research at Simpson Housing LLLP, where his research guided investment strategies to grow the company’s portfolio to approximately \$2 billion. Prior to Simpson Housing, he was Director of Research at Amstar Group LLC. At the Allstate Research and Planning Center, in California, he developed analytics and strategies for the company’s multi-billion dollar commercial mortgage portfolio.

Widely published, Burley has written numerous articles on current and forecast trends in the economy and real estate markets and co-authored two books on commercial real estate investment. He has been a contributor to UrbanLand, National Real Estate Investor, and TheStreet. He is a Counselor of Real Estate, a Fellow of the Homer Hoyt Institute, a Fellow of the Royal Institution of Chartered Surveyors, a member of the Urban Land Institute, a member of the Advisory Board of the Real Estate Research Institute, and a past member of the Board of Directors of the American Real Estate Society, receiving the ARES Board Service Recognition Award in 2016. He is the former Editor in Chief of Real Estate Issues.

Burley holds a graduate degree in Urban Economic Geography and undergraduate degrees in both Economic Geography and Political Science from the University of California. Before entering the private sector, he taught urban economic geography, regional geography, quantitative methods and graduate seminars at the University of California, Santa Barbara.

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and recreational activity — the “live-work-play” environment we know in many downtowns today that has become so attractive to consumers, businesses and investors.

From my notes while reading *24-Hour Cities*, there are common ingredients to Kelly's recipe for successful 24-hour cities to evolve. Among those ingredients are demographic and economic diversity, employment opportunity, housing opportunity and diversity, retail and service offerings, available transportation (both public and the accommodation of private forms), public safety, and a variety of cultural amenities that enhance quality of life (including the arts and recreational spaces, restaurants and bars as well as 24-hour pharmacies). It is interesting to note that Kelly discovers in his research that, by, “sustaining robust market conditions in their downtowns, the attributes of 24-hour cities contribute to overall economic growth regionally.” That is, as the 24-hour city itself thrives, so does the metropolitan area, including the suburban envelope that surrounds it.

This is all for the good and makes for an interesting read on the qualitative components of thriving 24-hour cities, including where some have succeeded in creating that environment, are close to succeeding, or have failed. Later in his book, Kelly quantifies a few indicators of “24-hourness” in certain cities and compares them to certain “9-to-5” cities and ultimately to their desirability as investment markets. Some of those indicators include electricity consumption, traffic flows, the presence of retail/food & beverage/cultural venues/nightlife and (importantly) population density.

While reading, I was reminded of my early career in real estate market research. Years ago, I was conducting a market study for an office investment in Richmond, Virginia. Many of the preferred elements for our investment portfolio were there, and the Richmond market was poised for economic resurgence that made the investment attractive. But one thing, according to my CEO, was missing. When he visited Richmond to see the building, he didn't see anyone out on the sidewalks. Nobody was out strolling on their way to lunch at midday or walking to the bars in late afternoon. I realized his point as soon as he made it. Richmond seemed almost deserted. There was a strong presence of business in

many forms, especially in the arts and advertising at the time; there was a solid educational presence with Virginia Commonwealth University; and, there were many new bars and restaurants in the Shockoe Slip area near downtown. But, there were few people out shopping, dining or drinking. What I didn't realize at the time was that my CEO and I had both visited Richmond in late spring and early summer, and Richmond was oppressively hot and humid at that time of year. People walked inside connecting, air-conditioned, corridors between buildings and the restaurants, shops and bars that were in them. Another factor, of course, speaks directly to Kelly's differentiation between 24-hour cities and 9-to-5 cities: Richmond was clearly a 9-to-5 city, with commuters returning home to the suburbs at the end of the day. I do not have current data on the population density of Richmond, but my guess is that it resembles many of the 9-to-5 cities referenced in this book.

Speaking to the attractiveness of 24-hour cities for investment, Kelly looks at several data points in the office sector that clearly suggest they have an edge over their 9-to-5 counterparts. Among these he includes: supply concentrations, absorption and vacancy trends, rent growth, and investment returns a la NCREIF. The numbers and the charts are revealing, with a preponderance of the data showing that 24-hour cities outperform on nearly all counts. Little wonder that so much capital, including overseas capital, looks to these markets for deployment. And, while many investors search for yield in secondary or tertiary markets these days, the longer term performance clearly belongs to 24-hour cities. It is also notable that, as Kelly points out, these are the markets that have recovered relatively rapidly from the Great Recession, enhancing their commercial attractiveness, and, in many cases, exceeding pre-recession levels.

One of the more enjoyable sections is Kelly's section in Chapter 8, called “Peregrinations: the 24-hour and 9-to-5 cities studied.” Here, he offers brief qualitative capsules of some of the cities highlighted in the study. I found myself nodding in agreement with his perceptions, occasionally sitting up as he introduces an interesting observation that I, myself, had not made in traveling to the same places. Full disclosure: I have been to all of them more than once, lived in or

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have family in or near several (including NYC, Philly, LA, Chicago and D.C.), and grew up in another (San Francisco). His observations are astute and really do capture the essence of these places.

I take issue only with a few typos and some of the charts and tables. While Kelly ably walks us through the charts and tables, I found it a tad cumbersome to read through his discussion and then have to flip back to the exhibit at hand. A few of the charts, in particular, could be better annotated to allow the reader to more readily recognize the metrics involved and their implications. And, there are a couple of tables — especially the table on “Journey-to-Work data” (Figure 7.6) where I had difficulty following the narrative and the numbers. Not a big deal, really, for as comprehensive a discussion as this book represents. I won’t quibble with the typos (the biggie

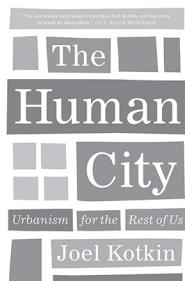
on page 261 “... whereas the 9-to-5 cluster had about 675,000 million square feet ...” should probably just say “... 675 million square feet ...”).

There is much more that can be said about *24-Hour Cities*. It is a wonderfully comprehensive — and generally enjoyable — read. And, Hugh Kelly has a decidedly skilled and elegant hand at covering the material. I needed to take frequent breaks while reading it, in order to digest one part of the banquet before moving on to the next. I enjoyed the “recipe,” and I will keep this one in my library for future reference, as I am quite certain that the material will remain useful for some time to come. And, if ever again given the privilege to teach one of my classes in urban economic geography, I think I may put it on the list of required reading. ■

# The Human City: Urbanism for the Rest of Us

By Joel Kotkin (© 2016, Agate B2, 304 Pages)

REVIEWED BY ROY SCHNEIDERMAN, CRE, FRICS



JOEL KOTKIN IS A SIGNIFICANT persona and one of the more prolific writers on the non-politically correct side of the “urbanism” debate. *The Human City: Urbanism for the Rest of Us* puts him once more into the fray.

By way of full disclosure, I am generally sympathetic to Kotkin’s positions, but have found his body of work to range from the insightful and thoughtful on one hand, to the simplistic and formulaic on the other. This book lands somewhere in the middle. It presents plenty of interesting insights as well as many statistics you won’t find in the popular press. But *The Human City* is also an eye-glazing narrative of statistics and stories with nary a single chart, table, map or picture in its 201 pages. This makes for a difficult and unexciting read. The book is clearly well-researched, with over 1000 footnotes and a 55-page bibliography. But as noted in the “Acknowledgements,” the book was born from a magazine article and it retains the “magazine article” feel from beginning to end, flitting quickly from section to section, idea to idea, but never reaching the levels of substance that Kotkin has achieved in other works. I found myself constantly tracking down his sources (which was thankfully made very easy to do), but wished I did not have to.

*The Human City* is written from the perspective of someone who wants to “take on” the urbanist orthodoxy and it does a pretty good job of it with an array of statistics and anecdotes. But only rarely does the book actually provide a clear articulation of the orthodoxy and present a systematic refutation.

Three key themes are laid out in the book’s first chapter: children, crowding and choice. Probably the single-most dominant theme in the book is its emphasis on family and children: “If we are to live

## About the Author



Roy Schneiderman, CRE, FRICS, founded Bard Consulting in early 2001 to provide strategic real estate counsel to clients throughout the real estate industry. Roy has been providing real estate consulting services to clients including financial institutions, pension funds, property owners, developers, law firms and public sector entities since 1983. Particular areas of expertise include real estate investment analysis, transaction negotiation, development feasibility, real estate investment strategy and litigation support. He has analyzed properties valued in excess of \$4.0 billion throughout the United States.

Prior to founding Bard Consulting, Roy was Principal and Senior Managing Director with Sedway Group/CB Richard Ellis. He had previously spent four years as a real estate consulting manager with Deloitte & Touche, an international accounting and consulting firm. Before Deloitte & Touche, Roy worked for Keyser Marston Associates, a regional real estate consulting firm headquartered in San Francisco. Roy has lectured on real estate issues at the University of California at Berkeley and the California Redevelopment Association Institute.

well in the city, it should first and foremost address the needs of future generations ... focusing on those areas where families — the new generation — are likely to be raised ..." and "... without parents, children, and the neighborhoods that sustain them, it would be impossible to imagine how we, as a society, could 'live well' or even survive as a species."

*The Human City* presents an array of data throughout its pages demonstrating that in general, as population density increases, birth rates decline. This is a fascinating topic. Why are people less likely to have children in denser urban areas? Has it always been this way? Is this changing? Might it change in the future? Is it primarily related to school quality? Do parents perceive children need more open space and nature than most cities can provide? Will that change? There is a long list of interesting questions.

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I was very much looking forward to a discussion of these issues and potential answers to these questions. The book teases, but ultimately fails to deliver this thoughtful discussion content, electing instead to pepper the reader with isolated data-points. For example, while dense-and-getting denser Tokyo is noted for its low birth rate, it is not compared with the de-densifying rest of Japan. More generally comparing and contrasting areas with below-replacement level birth rates with places with above-replacement level birth rates could have been very instructive.

A second major theme of *The Human City* is that having people crowd into megacities is not necessarily a good outcome. In particular, Kotkin argues that megacities tend not to be incubators of economic growth or a thriving, family-friendly middle class. An entire chapter is devoted to this issue and Kotkin takes full aim at the thesis that urban density is per se a good thing by providing substantial statistical data showing that dense, but poor, cities are ... poor, lacking in economic opportunity, and not necessarily very pleasant places to live. Examples of megacities include Jakarta, Dhaka, and three urban areas in India. In fact, "There were 34 such cities in 2014, which now account for roughly 13 percent of the world's urban population and 7 percent of the world's total population." But here again the book teases but only partially delivers. The 34 megacities are not identified, nor is the definition of megacity ever presented. In fact, I found it somewhat startling that only 7 percent of the world's population lives in its 34 largest cities, but this observation was not explored.

The "megacity" chapter of *The Human City* does a nice job of demonstrating that large, dense cities have plenty of problems and that "poor" large, dense cities are, for the most part, not appealing places to reside. And the book fails to compare and contrast urban successes and failures with an eye towards accentuating the positive while minimizing negative elements.

Another major theme in *The Human City* is housing choice. "Ideally urban areas should provide the widest range of living options — from exurbs and suburbs to a thriving urban core — that provide for different people at different stages of life."

Kotkin has no issue with those who want a "live,

work, play" environment in a high-density neighborhood, but he has an issue with those who either predict or advocate a more atomistic, individualistic future with small households living in small, high density units. He marshals ample statistics that demonstrate the majority of people in America do not conform to this model. In fact, most U.S. population growth has occurred in neighborhoods that do not fit the urbanist orthodoxy, although, starting from a small base, there have been recent years when center-city growth rates have actually outpaced suburban growth rates. The situation is a bit less clear cut globally, but on the whole Kotkin's position here is also well-supported.

Rather, *The Human City* suggests a) people are complicated with diverse desires, b) people's preferences often change over time and c) people ought to have many living arrangements from which to choose. Of course, few people would disagree with these ideas, although, at the margin, there are certain orthodox urbanists who might take issue with each. First, and less prevalent, are those that acknowledge the heterogeneity of housing desires today, but attribute this to some external, sometimes sinister, force that is directing people unnaturally toward suburbia and away from the particular branch of urbanism they espouse. Secondarily there is the claim that maybe people wanted "suburbia" in the past, but "this generation is different" and now all roads point to a high-density future. Kotkin has little patience for either presenting on "I know what is best for you" paternalism or a "this generation is different" hypothesis.

*The Human City* repeatedly and reasonably, makes the claim that people ought to be able to choose the type of housing and living arrangement that is most appropriate for themselves at different points in their lives. But the book fails to make the case to support that claim. Questions as to why some people might prefer "X" to "Y" or "Z" are not deeply explored. And thoughts about how to possibly get "the best of both worlds" in urban, suburban and exurban environments are not particularly well developed. This is probably the most frustrating thing about the book. The title *The Human City: Urbanism for the Rest of Us* promises such discussion but only occasionally delivers. ■

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