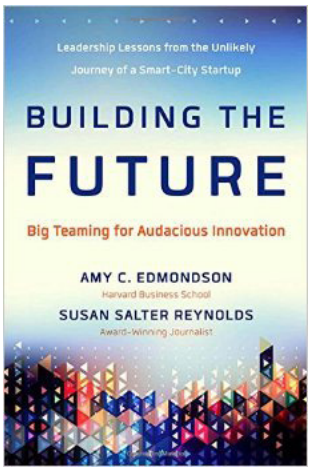


Building the Future

A book excerpt by Mobius Senior Expert, Amy Edmondson and Susan Salter Reynolds

> **"There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things."**
>
> **– Machiavelli, *The Prince***

BUILDING THE FUTURE. TAKE A DEEP BREATH AND CONSIDER WHAT THIS means, living in the twenty-first century. It doesn't mean the next iPhone, the next electric car, or even the first molecular teletransporter (à la *Star Trek*). These could all certainly qualify as life-changing, history-shaping innovations, but building the future does not mean building isolated products. The lone innovator bathed in cathode-ray green lights in his garage late at night designing the next amazing thing is not the protagonist of our story.

We are interested instead in innovations that constitute a new order of things – interacting elements that must work together and simply aren't worth much alone. When we talk about building the future, we're talking about bringing new complex systems into being. This book explains why this is so hard and what leaders can do to make it easier.

The very phrase *building the future* has two critical parts, the verb and the noun. *Building* captures the process of constructing something, of putting pieces together into a new integrated whole. The noun, the *future,* is the target. Envisioning the future is only the first step toward building it. What's the next step? Read on.

You could say that with every step each of us takes, we are, in fact, building the future: each time we use resources carefully, each time we remember to turn out the lights, each time we choose a bicycle over a car. While it is certainly true that the future is always unfolding – arriving whether we actively pursue it or not – some pioneers glimpse technological or societal possibilities before the rest of us do, and they set out to make them happen. Building the future is about bringing a desired future into being *on purpose.*

Today we have the opportunity to build the future consciously and proactively. Building the future is by its nature audacious innovation. Inherently creative, building a desired future is fueled by vision and realized through experimentation. Our research focused on the built

environment as a particularly timely and vital arena for future-building. We studied people from organizations in several industries that contribute to innovation in the built environment, and we learned that it requires intense collaboration and a particular kind of leadership. As we will see, future-building takes time – and failure is a necessary part of the journey.

A NEW ORDER OF THINGS

Future-building is hard. When success requires introducing what Machiavelli, in the sixteenth century, called "a new order of things," success is likely to be elusive. This is because bringing together diverse elements (technologies, plans, people, or organizations) to create a functioning whole presents countless ways for integration to break down. Teaming across disciplinary and industry boundaries is needed to respond to the spectacular challenges the world faces today, but it requires a new way of working, a new way of thinking, and a new way of being.

Future-building challenges are not limited to the built environment. The 2014 Ebola outbreak in West Africa was a terrifying example of a specific need for a novel systemic response, enacted by diverse organizations working together around the world. A response had to be designed on the fly under enormous pressure, while more and more people inside and outside Africa were diagnosed with the disease. Government, healthcare, university, and nonprofit organizations with varying priorities were forced to work together. President Barack Obama appointed Ron Klain as (the unfortunately titled) "Ebola czar" to help coordinate the diverse inputs of all of these groups. The idea, as reported (and hotly contested) at the time, was that the situation called for someone who could set priorities and get government agencies and private-sector organizations of all kinds to work together to innovate. Its success was also contested.

The 2010 rescue of 33 Chilean miners trapped beneath 2,000 feet of rock harder than granite was another such situation. Against all odds a magnificently coordinated and highly innovative rescue operation unfolded – knitting together the ideas and efforts of experts from multiple countries, industries, and sectors to produce a novel process and a remarkable outcome.[1] The leadership practices that allowed this success are remarkably similar to those we develop in this book.

In these examples crisis-motivated innovation required cross-boundary collaboration. Other cases of future-building involve pioneers setting the forces of complex innovation in motion. Consider the emergence of the telecommunications system a century ago. It starts, of course, with the invention of a telephone, and before that its subcomponents – the mechanical acoustic devices for transmitting speech and music over a distance greater than that of normal human interaction. But to function in its intended way, the telephone required a complex infrastructure of components – wires, poles, monitors, switches, protocols, regulations, and more, extending over vast geographies – to be developed around it.

Sometimes future-building requires little in the way of technological innovation – just system building. When Fred Smith, CEO of FedEx, wrote a college term paper on the idea of an overnight-delivery service, he could not possibly have imagined – or single-handedly developed – all the moving parts that would be required to turn that vision into the $27 billion company it is today. What he did imagine was "a completely different logistics system."[2]

Working as a charter pilot, Smith could see the extent to which air travel was used to fly packages around, primarily for big companies like IBM and Xerox. The logistics, as reported by fellow pilots, were a nightmare. Airfreight at the time, Smith noticed, relied on passenger planes. What was needed was a whole new infrastructure that would take the logistical burden off passenger airlines and centralize it. He envisioned a nationwide clearinghouse and an integrated system of cars, trucks, and planes. His system required sophisticated information technology (IT) to allow unprecedented precision and a new way of tracking items as they moved around the world. For the service to function as intended, the tracking system would need handheld computers and machine-readable, sequentially numbered bar codes. It required obtaining new radio frequencies and designing new equipment for trucks. Government deregulation of the airlines in 1978 was the final piece of the puzzle, clearing FedEx for takeoff. Smith, leading the innovation journey that put all of these parts together, thus created a whole new order of things.

"While few would advocate for rigid organizational hierarchies anymore, understanding and practicing the new forms of leadership that enable complex, team-based, whole-system innovation is – we'll say it again and again – challenging."

WHAT IT TAKES TO BUILD THE FUTURE

Future-building is creative and iterative but not haphazard. It is interdisciplinary, and it takes leadership to bring it about. While few would advocate for rigid organizational hierarchies anymore, understanding and practicing the new forms of leadership that enable complex, team-based, whole-system innovation is – we'll say it again and again – challenging. In this book we describe two basic requirements that entrepreneurs and leaders of mature organizations alike must embrace to build a sustainable future.

The first is a new kind of collaboration that spans more (and more diverse) groups than ever before. We call this *Big Teaming*. The second – essential to enabling the first – is leadership that blends big vision and small action to pursue *audacious innovation*. Big vision inspires, calling attention to what might be possible. But achieving big vision is never straightforward. It is essential to empower people to experiment with small action that might, with luck and skill, help bring the vision about. In the case study of a smart-city startup that runs throughout this book, the challenge of spanning industry boundaries looms large, while experimenting through small action proves both elusive and essential.

Big Teaming

Many organizations have shifted to a new way of working that makes teaming and learning part of the job.[3] Prior work on teaming includes examples of people in crisis situations working together to surmount seemingly impossible, but finite, challenges. In such situations people often team up across geographical, social, and cultural boundaries to get the job done. Building the future takes teaming to the next level. The same fundamental principles apply, but the distances between players are greater than when we encourage cross-functional teamwork within a company. The boundaries are more difficult to cross. Goals are more often at odds. And clashing professional cultures are likely to inhibit meaningful communication.

In this book we highlight both the challenges and the opportunities that lie in teaming across the cultural divides that separate people in different industries. To do this we first must explore how industry cultures differ, taking a deep dive, chapter by chapter, into five domains – information technology (chapter 3), real estate development (chapter 4), city government (chapter 5), architecture and construction (chapter 6), and the modern corporation (chapter 7). As we do so, we follow the ups and downs of a startup's efforts to span these industry boundaries. In each chapter we supplement our field research with published sources to paint fuller portraits of the industry than our case study could provide on its own. We then take a look, in chapter 8, at why it's difficult to collaborate across these worlds and what leaders can do to facilitate it. Chapter 9 updates our case study and concludes with ideas about how leaders can integrate big vision with small, smart action.

Leading Audacious Innovation

Future-building leadership starts with imagination that fuels vision: ambitious, bold, creative vision informed by deep expertise in a relevant field and yet paradoxically open enough to adapt when needed. Such vision thus has three essential components; it's bold, it's meaningful, and it's open to adaptation as more is learned.

Big vision must be followed – and dynamically realized – by *small action:* small, tentative action that is deliberately framed as an experiment and that builds knowledge

quickly. This iterative process of action, feedback, and learning expects and tolerates failure on the way to success. It takes a particular leadership mind-set to cope with the contradictory demands of envisioning and advocating audacious new possibilities while engaging in small, imperfect action, not to mention the contradictory demands of believing in one's own vision while enrolling a host of other experts to help transform that vision.

Balancing the competing goals of influencing and innovating is thus a new and essential leadership practice for future-building. When you're doing the new-new thing, it is easy to prioritize activities that build credibility in the external world, such as giving talks and building relationships with prestigious players in varied sectors.[4] This can mean that the actual work of the organization – the day-to-day work of innovating and developing products and people – takes a backseat to selling a story and building a reputation. The charisma and excitement that swirl around a pioneer's vision are critical for drawing people into the orbit, building a solid team, generating funds, and building the ecosystem of players it takes to realize that vision. But a leader's focus must encompass the outside and the inside, influencing (vision) and innovating (action). Through our multicultural journey across the various industries with which we came into close contact during our study, we offer some ideas about how to manage this tension.[5]

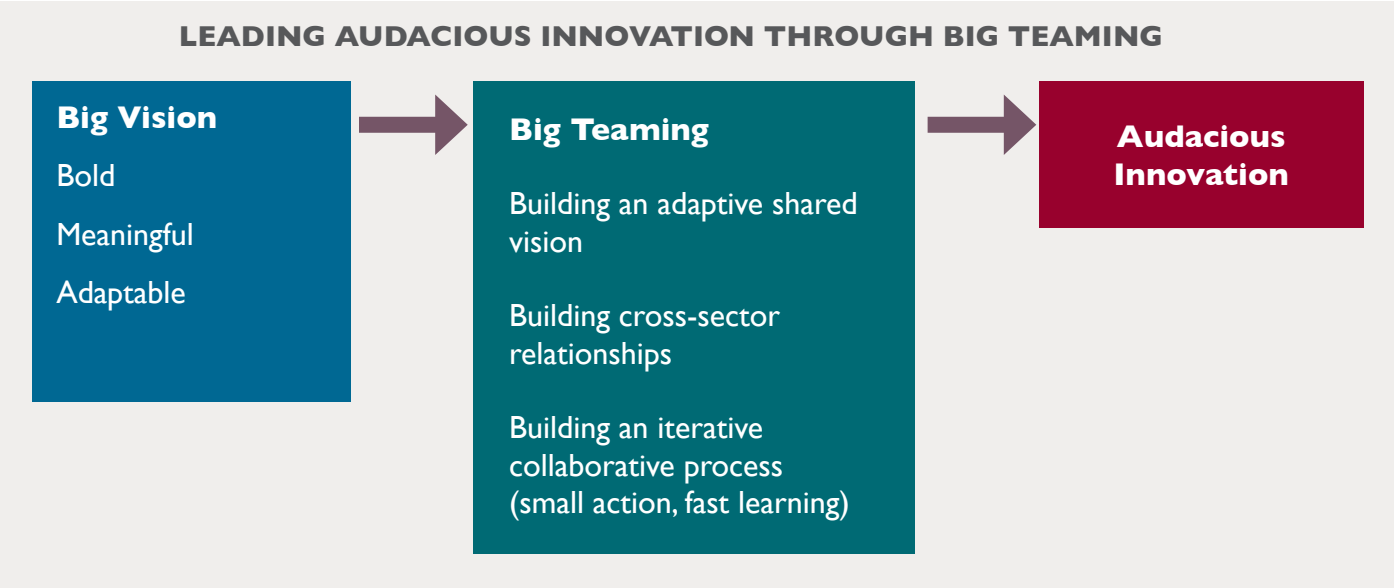
In sum this book proposes that *building the future* requires three crucial, ongoing activities: *building a shared vision that evolves as more is learned, building meaningful cross-sector relationships,* and *building an iterative collaborative process.* The diagram *Leading Audacious Innovation through Big Teaming* depicts these activities. To explain why they matter – and how to bring them about – we use a case study that highlights both the opportunities and the challenges of Big Teaming for audacious innovation.

A CASE STUDY OF FUTURE-BUILDING

This book is our way of wrapping our minds around these enormous challenges by studying people who, one brick, one dollar, one sensor at a time, sit in meetings and in front of computer screens and occasionally get out to see a physical landscape in their efforts to create a new order of things. In fact, so much is new about these efforts that it can be hard for observers (and even for those involved) to know what to make of the promises, the expectations, and the progress along the way.

Our ideas are conveyed with the help of a longitudinal case study – a human story that reveals certain truths about managing complex innovations – supplemented by archival research on smart-city projects carried out by other organizations and by interviews with leading thinkers and practitioners in related fields. These additional sources help us set the context that gave rise to the founding of the small company at the center of our research: Living PlanIT. We watched the company grow and change, stumble and get back up, and reinvent itself. Sometimes we thought we could see the future of Living PlanIT alongside the Apples and Googles and Facebooks of the world. Other times we wondered whether Living PlanIT could navigate the seemingly insurmountable challenges ahead.

Living PlanIT was pursuing a bold vision. When we encountered the company, its scope – building a brand-new sustainable high-tech city from scratch to lead the way to building more such cities around the world – was breathtaking. The company struggled with doing anything



small, anything partway. We learned of the team's conviction that being big was integral to their strategy. It seemed, sometimes, that it had to be all or nothing. But what might the company do to test its vision, develop its strategies, and make steady progress toward the ultimate prize of building the future?

Whatever the long-term fate of Living PlanIT, we could not have chosen a better opportunity to learn what building the future truly involves. The company gave us a rare opportunity to glimpse a group of creative, hardworking people pursuing a dream. Intrigued by the promise of smart-city innovation, at times we suspended disbelief. To set the stage for our research, we start with some background on the urban built environment, drawing from the chorus of voices that has considered its challenges and opportunities.

THE BUILT ENVIRONMENT

To study how pioneers introduce a new order of things, we chose to focus on the built environment because of the opportunity it affords for audacious innovation. Long a laggard in the innovation landscape, the built environment today is suddenly again a target for change. Just as Renaissance visionaries like Leonardo da Vinci and Christopher Wren combined applied mathematics and philosophy to introduce revolutionary advances that transformed the size, span, and strength of buildings, modern-day visionaries are recognizing the potential to transform what we build – and how we build it – by leveraging advances in materials and information technologies. Buildings and cities, they argue, can be smarter, greener, more efficient, and more livable. And many have begun to believe that there are business opportunities to be exploited in making them that way. Today, as we explain in chapter 2, these activities are called the smart-city industry.

The built environment refers to "the human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply or energy networks."[6] Public health experts define the built environment as "the human-made space in which people live, work, and recreate on a day-to-day basis." The term encompasses places and spaces created or modified by people, including buildings, parks, and transportation systems. In short the built environment comprises the complex systems that we inhabit and depend on in our daily lives.

Cities – collections of buildings, streets, parks, airports, offices, stores, transportation systems, and more – have become the target of future-building innovation across a surprising range of disciplines. Some innovations relate to retrofitting existing cities with smart technologies; others involve creating new cities from scratch.

What is a city? The dividing lines between cities, towns, and non-cities are difficult to draw. Wikipedia defines a city as a relatively large and permanent settlement. But

how large? In Shanghai recently, a graduate student told us she was from a small town. Probing further, we learned that her hometown's population was 400,000 – a large city in New England. For now we'll have to be content with understanding cities as locations, people, economic activity, and municipal entities combined. Cities today have become critical hotspots for innovation. How cities are built and managed matters far more than ever for the future of humanity.

But why hasn't the innovation happened faster?

This book shows that innovation in the built environment can be stymied by a lack of common language among the essential players. Industry expertise, jargon, values, time frames, and more form silos that make it hard to collaborate. People in real estate have their business models and priorities; people in construction have certain ways of planning and completing projects; mayors and others in city government have their priorities and time lines; and techies, long portrayed as social mavericks, have their expectations and frustrations, too.

Cities have always evolved – but gradually. The earliest cities were powered by human decisions and actions, with human and animal power the only source of energy. People transported water, grew food, built structures, and removed waste products as best they could with the help of their livestock. Later cities developed extensive mechanized supply systems – waterworks, sewer systems, power supplies, streetlights – that took over and managed critical urban inputs and outputs centrally, each with its own specialized workforce. Today more and more essential functions are digital in nature[7] – smart.

Smart cities, as defined by author Anthony Townsend, are "places where information technology is combined with infrastructure, architecture, everyday objects, and even our bodies to address social, economic, and environmental problems."[8] With novelty comes a proliferation of terms, and this arena is no exception.[9] Whether cities are problems or solutions is a matter of some debate.

Cities as Problems, Cities as Solutions

Historically, cities have gotten a bad rap. Cities are resource hogs. Higher average living standards in cities compared with rural areas translate into greater energy use and higher per capita carbon emissions. Cities are responsible for roughly 70 percent of all greenhouse gas emissions but house only half of the population.[10] The city as physical or moral cesspool is an engrained postindustrial image. Here urbanization and squalor go hand in hand. In part this notion is a true depiction of rapid, unplanned growth. Vast population increases at the edges of so-called megacities give rise to health hazards, desperate places, shantytowns replete with environmental risks, and crime, often in the shadow of affluent suburbs. The *favelas* of Brazil provide vivid examples.

As many have noted, global urbanization brings a host of challenges. The UN *World Economic and Social Survey 2013: Sustainable Development Challenges* report calls for a "transformation of the energy system," particularly in cities:

> *To achieve this energy transformation together with food and nutrition security, sustainability of cities, and other development goals after 2015, large-scale investments will be needed. Such investments will require sufficient levels of supply of long-term financing, and they will have to be carried out both by public actors through increased public expenditure and by the private sector, which will depend critically on creating the right incentives for investments in sustainable development.*[11]

A recent study comparing data from 100 cities in 33 nations showed that cities without well-developed public transportation had dramatically higher levels of greenhouse gas emissions.[12] Denver, for example, weighed in with twice the greenhouse gas emissions per capita (21.5 tons) of New York City and even Shanghai.[13]

In his popular albeit controversial 2010 book, *Green Metropolis,* David Owen makes the case that cities are, in fact, an ecological way to live because they boast density, which means less driving compared with suburban communities.[14] Economist Edward Glaeser makes a similar point in *Triumph of the City.*[15] Both books fairly gush about the social, economic, and environmental virtues of cities.

A growing chorus of voices conjures the city as a sparkling solution to environmental ills, with images of silent transportation gliding along, energy-producing architecture in harmony with the environment, and landscaping both beautiful and edible. Open space,

places to walk and play. Cafés everywhere. Green parks. Bicycles. The Emerald City.

Interest in smart sustainable cities has grown as people in different sectors investigate pieces of the urban population boom puzzle. The idea that humans are the problem, long a tenet of the environmental movement, has shifted a bit to make room for a vision of people as problem solvers.[16] Despite substantial differences in beliefs, strategies, principles, and methods, most agree that an explosion in the apparent need for cities offers a clear, if challenging, opportunity for getting it right, for building cities that are viable and dynamic, exciting and green, and hotbeds of innovation and efficiency.

Peter Calthorpe, a founder of the Congress of New Urbanism, an organization promoting sustainable, walkable, mixed-use urban communities, and the author of *Urbanism in the Age of Climate Change,* has written that "urbanism is the foundation for a low-carbon future," and the most cost-effective solution to climate change, even more so than renewable energy.[17] Urbanism allows us to do more with less. Calthorpe's eponymous urban design firm, Calthorpe Associates, was named one of the 25 "innovators on the cutting edge" by *Newsweek* for its work redefining models of growth in America. "Good urbanism," Calthorpe maintains, is defined by "three basic principles":

One is human scale, *which has to do with designing public spaces around the pedestrian rather than the car. Ironically, human scale can exist in incredibly dense places, like Manhattan, or in relatively low density places, like the historic centers of our rural towns. . . .* Diversity *is another key ingredient of urbanism . . . you have to have a range of uses mixed together, you can't isolate housing and shopping and employment into separate zones. . . . You [also] need a diverse population – you can't isolate age groups, income groups, and family types. . . . The third principle, which wasn't historically part of urbanism, is* conservation and restoration.[18]

These principles – human scale, diversity, and conservation – are not at odds with smart technologies but rather are complementary strategies for improving urban livability and resource use.

Meanwhile cities are widely recognized as engines for economic growth and innovation. Today only 600 urban centers generate about 60 percent of global gross domestic product (GDP). Tokyo, with its 35 million people and nearly $1.2 trillion in economic output, ranks among the world's top 15 economies, larger than the nations of India and Mexico. Cities encompass the largest and fastest-growing concentration of natural resource consumption and are, consequently, a logical place to focus sustainability efforts.

Taken together these perspectives – viewing cities as solutions that foster livability, sustainability, and innovation – have laid a foundation for smart-city innovation.

Smart Cities, Smart Buildings

The late William J. Mitchell, professor at the Massachusetts Institute of Technology (MIT) and a leading thinker in the field of digital technology and

urban studies, believed in the possibility of smart cities. Technologically networked urban environments could be superbly responsive to the needs of their inhabitants, he argued. Through information and communication technology (ICT), combining hardware (embedded sensors in buildings and infrastructure that can detect activity of various types) and software (that stores and uses data), cities could provide customized services to inhabitants on demand, enhancing efficiency and livability. In Mitchell's vision networked smart cities would generate collective intelligence in communities. It would be easy to make better decisions – without ever having to sit around a table to debate them.

This vision may slowly be turning into reality. ICT systems are starting to be used in managing energy, transportation, and waste.[19] Smart-city advocates conceive of vast systems for collecting and analyzing big data on human behavior patterns – using networks of sensors and microcontrollers (tiny computer systems that combine processing, memory, and input/output devices) – to make cities more sustainable and more livable. Sensors detect activity, and microcontrollers analyze the data against targets and deliver output to users (through some linked device, like a smartphone) to influence their behavior. For example, consider how today's access to traffic data may lead you to choose a different route home. More-sophisticated systems could eventually control the car itself, leaving driver decisions out of it.

> "*Big vision* must be followed – and dynamically realized – by *small action*: small, tentative action that is deliberately framed as an experiment and that builds knowledge quickly."

A target for innovation far less ambitious than driverless cars is the building itself. The use of sensors for operating and maintaining buildings is a strategy to minimize environmental harm and enrich the user experience. A 2011 McKinsey study on resource productivity placed improved building energy efficiency first of 130 opportunities. The report identified potential savings of almost $700 billion by 2030, if we took advantage of new, improved, energy-efficient buildings.[20] According to the Center for Climate and Energy Solutions, buildings have been responsible for 38 percent of carbon emissions.[21] Leading experts around the world maintain that the potential to build environmentally sustainable buildings is vastly underrealized.

At nearly 3.4 percent of the US GDP, construction, already a large industry, is growing to accommodate urban growth around the world. The industry, however, is fraught with waste and inefficiency.[22] Buildings are thus not only the largest opportunity for emission reductions but also the most cost-effective. In fact, of the cost-neutral reduction opportunities across all sectors identified by the Intergovernmental Panel on Climate Change, 90 percent come from reduction measures in the building sector.[23] The potential to build and retrofit green buildings and infrastructure is thus enormous. Funding mechanisms, however, remain underdeveloped despite the promise of significant economic returns over time.[24]

In sum the need for innovation in the built environment is widely felt, and cities are a primary domain for that innovation.[25] The Internet has already transformed many businesses,[26] and today it seems only a matter of time before the physical landscape catches up.

Companies large and small have been developing technologies – including sensors, software, and data analytics – to make cities more environmentally sustainable, livable, and functional. For example, some explore systems to reduce energy consumption or manage traffic flows on city streets. Others develop integrated solutions to help city governments, like IBM Smarter Cities and Cisco Smart+Connected Communities. According to a 2011 Cisco news release, the aim was to "transform physical communities"; a smart-city approach encapsulated "a new way of thinking about how communities are designed, built, managed, and renewed to achieve social, economic, and environmental sustainability."[27] Large companies have the advantage of resources to fund the needed research and the pilot projects, but startups have the advantage of believing anything is possible. We talked to executives in both arenas and decided to focus on a startup to see how this might play out.

As we did so, every day it seemed a new innovation

"There is no question that assessing the earth's resources against humanity's growing needs poses an immense opportunity for audacious innovation."

would enter the smart-city arena, some more outlandish than others. "The Smartest Cities Will Use People as Their Sensors: By networking individuals and their gadgets, urban apps will tell inhabitants what is happening all around them, in real time," ran a headline in *Scientific American.*[28] Many had potential. For example, Trash Track, a Seattle-based innovation, reveals how garbage flows through and out of the city's waste management system, identifying items traveling around the United States to legal and illegal dumps. The results uncovered ways to improve compliance and minimize carbon dioxide emissions by transporting waste more efficiently. Real-Time Copenhagen generates data about shifting traffic and pollution patterns, as well as where nightlife is unfolding. "As Sea Levels Rise, Dutch See Floating Cities" ran the headline to a New York Times story about Dutch architects investigating the possibility of a floating Holland.[29] There seemed to be no end to human inventiveness.

Sobering realities and exciting possibilities co-exist in an uneasy partnership in this space, but there is no question that assessing the earth's resources against humanity's growing needs poses an immense opportunity for audacious innovation.

A PERFECT STORM

While smart-technology innovations around the globe percolate, two intertwined megatrends have laid the foundation for their eventual use. One trend is growing awareness of threats to the sustainability of the earth's natural environment. The second is the rapid rise in the number of people moving into and living in cities. Combined, these large-scale shifts create a perfect storm for urban innovation.

Megatrend One: Climate Change

News of floods, earthquakes, tsunamis, famine, chronic disease, toxic waste, nuclear winter, and species extinctions have become too frequent to count. Epic storms with human names – Katrina, Sandy, Haiyan (in the Philippines) – increasingly terrify and devastate. A 2010 article in *Scientific American,* darkly titled "How Much Is Left? The Limits of Earth's Resources," presented a long and frightening list of concerns: glacier melt (in some places more than a half meter per year); oil scarcity (by 2050 we will have used all but 10 percent of the earth's

available oil); freshwater scarcity (by 2025 renewable water reserves may drop below 500 cubic meters per person per year, considered the minimum for a functioning society); and even mass extinction (biologists warn of events on par with those that killed the dinosaurs).[30] Climate change threatens to alter everything about our lives, from agriculture and food supplies to productivity and the frequency of extreme weather events. The *Scientific American* article also estimated that even coal, long thought inexhaustible, would dwindle to nothing by 2072, given the current rates of extraction.

Our ability to feed ourselves in the future has been increasingly revealed as precarious. Even today roughly 925 million people are hungry. And the number is growing; the United Nations' Food and Agriculture Organization (FAO) warned that by 2080, 600 million additional people could be at risk of hunger as a direct result of climate change.[31] In addition to those who face starvation, many more will be chronically malnourished. The *Scientific American* report predicted that counteracting the ill effects of climate change on nutrition would cost more than $7 billion per year by 2050, while the FAO and the Organisation for Economic Co-operation and Development warned that the direct impacts of climate disruptions on food production patterns would lead to more "extreme volatility events on international food commodities markets."[32]

Ecological footprint analysis, introduced in a 1992 University of British Columbia doctoral dissertation, compares human demand on nature with the biosphere's ability to regenerate resources and provide services.[33] It does this by assessing the biologically productive land and marine area required to produce the resources a population consumes and absorb the corresponding waste using prevailing technology. The WWF (formerly known as the World Wildlife Fund), a proponent of this approach, claims that the human footprint already has exceeded the biocapacity (the available supply of natural resources) of the planet by 20 percent.[34] Yet, as readers well know, the earth's population continues to rise. The United Nations (UN) estimates that the global population will grow from 6.5 billion in 2010 to 8.5 billion in 2050.[35] Moreover, the average standard of living across the globe, which translates into greater per capita resource consumption, has also risen steadily. Clearly, with more people consuming more, the ecological footprint problem is exacerbated.

FIVE LEADERSHIP LESSONS FOR BUILDING THE FUTURE: A PREVIEW

Lesson 1: Start with Big Vision

Building the future starts with a bold and meaningful vision – but with a twist: the vision must be open and big enough to evolve as a result of others' input and with the emerging insights derived from new experiences.

Lesson 2: Foster Big Teaming

Building the future requires teamwork that bridges industry cultures – which takes empathy and skill.

Lesson 3: Celebrate Mavericks

Future-building gets a boost from successful, credible experts who glimpse new possibilities and help shift the conversation in an industry.

Lesson 4: Embrace Small Action

Building the future is an iterative learning process – a series of small actions that help realize the evolving big vision.

Lesson 5: Balance Influence and Innovation

Building the future requires leaders to balance influencing (selling the vision) and innovating (developing the vision through small smart action).

Megatrend Two: Urbanization

We are fast becoming an urban planet. With 180,000 new people moving into cities each day, the twenty-first century is the era of urbanization. In 2008 the world reached an invisible but profound milestone: half of its population was living in cities, for the first time in history.[36] By 2050, according to UN estimates, 70 percent of the world's population will live in cities.[37]

Many of these cities have yet to be built. China's announcement in spring 2013 of plans to move 250 million people into cities over the next 15 years sent ripples through the blogosphere.[38] Some estimate a need for more than 10,000 new cities by 2050 to house an anticipated 3 billion new urban inhabitants. Such estimates represent a massive construction project.

Should this construction occur in the same way as it did in the creation of today's existing cities? Logically, given environmental challenges, technological advances, and the relative speed of the growth in urbanization, this would not be the best approach. Letting cities merely evolve, as in centuries past, is likely to lead to sprawling slums and suburbs, excessive use of personal cars, divergent economic opportunities, inadequate infrastructure, and a lack of open space. Coming up with better-designed and more coordinated alternatives, however, requires collaborative innovation on an unprecedented scale.

The specter of uncontrolled growth, marginalized slums, health issues, and social unrest in megacities with populations of more than 10 million also looms large. By 2013 Tokyo, New York, Mexico City, and Shanghai had populations in excess of 20 million. *The Endless City,* published in 2007, with its sequel, *Living in the Endless City* (2011), showcased writings by architects, mayors, urban planners, policy makers, and others on concerns about physical growth in cities and on how to improve the quality of life in megacities.[39] Some expressed a faith in technology to solve social and physical problems associated with growth; others put faith in visionary leadership.

Cities are places of modernity and opportunity. Nonetheless not all of tomorrow's new urbanites will relocate voluntarily. In his October 2011 speech on World Habitat Day, Dr. Joan Clos, executive director of the UN Human Settlements Programme, warned that by 2050 we can expect more than 200 million environmental refugees from the effects of floods, drought, overheating, and other climate-related disasters. Left to chance, urbanization is unlikely to proceed optimally for both the environment and the residents.

Adding 2 billion people to the planet is like adding two Chinas to the number of people alive today. Leaving aside for now the issue of whether forecasts are destiny, it is clear that large numbers of people will need food, water, and other resources on a planet that, as noted, already faces stretched resources. Leading scientists in climate-related fields have argued that human activity is already shaping climate and the web of life.

Together these megatrends call for innovation that is no less significant than a third era in the history of cities,[40] no less than a new order of things. *How can leaders today – armed with ambitious visions and complex, fallible technologies and organizations – help bring this about?* The rest of this book explores this question. See *Five Leadership Lessons for Building the Future: A Preview* for a summary of the lessons that unfold in the chapters ahead. ■

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