

# Making

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Insights from  
10 Years of  
Lectures at  
the Centre for  
Liveable Cities

Edited by  
Koh Buck Song

# Cities

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# Liveable

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MAKING CITIES LIVEABLE:  
Insights from 10 Years  
of Lectures at the Centre  
for Liveable Cities

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CENTRE FOR LIVEABLE CITIES

Set up in 2008 by the Ministry of National Development and the Ministry of the Environment and Water Resources, the Centre for Liveable Cities (CLC) has as its mission 'to distil, create and share knowledge on liveable and sustainable cities'. CLC's work spans four main areas—research, capability development, knowledge platforms, and advisory. Through these activities, CLC hopes to provide urban leaders and practitioners with the knowledge and support needed to make our cities better. For more information, visit [www.clc.gov.sg](http://www.clc.gov.sg).

CLC LECTURE SERIES

As a knowledge centre for liveable and sustainable cities, the CLC Lecture Series provides a platform for thought leaders and experts in urban development and planning to exchange ideas and share knowledge. These lectures are attended by a good mix of participants from the public and private sectors as well as academia, bringing about robust discussions and a diversity of perspectives.

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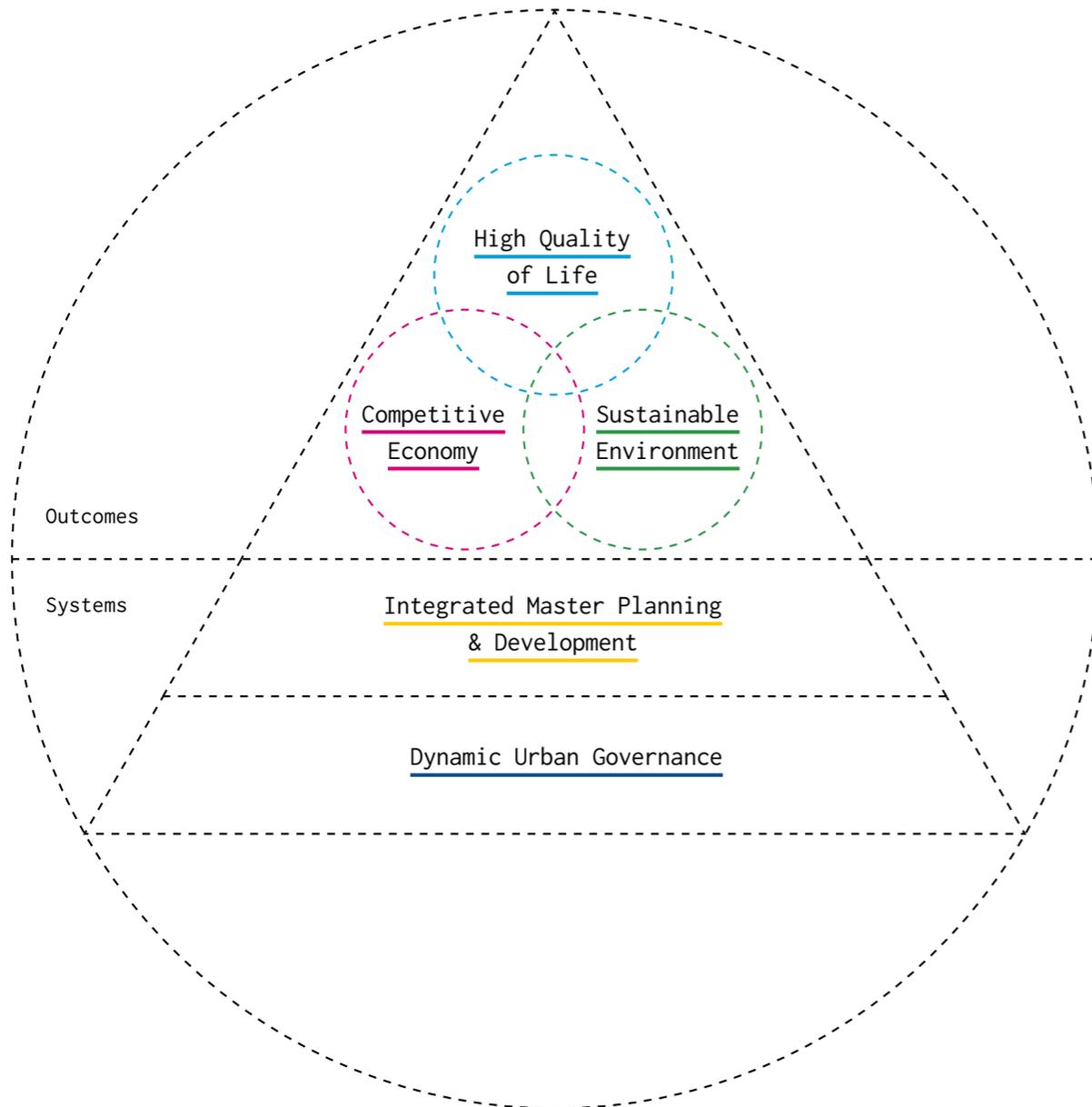
MAKING CITIES LIVEABLE

INSIGHTS FROM 10 YEARS OF LECTURES  
AT THE CENTRE FOR LIVEABLE CITIES



HIGH QUALITY OF LIFE  
COMPETITIVE ECONOMY  
SUSTAINABLE ENVIRONMENT  
INTEGRATED MASTER PLANNING & DEVELOPMENT  
DYNAMIC URBAN GOVERNANCE

SINGAPORE LIVEABILITY FRAMEWORK



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This year marks a decade since The Centre for Liveable Cities was founded in Singapore to ask fundamental questions on how people can live well in cities. In these ten years, the Centre has become known globally as a thought leader and champion for liveability and good urban development. It is respected for the way it has connected city leaders, private sector experts, researchers and advocates to share knowledge about the issues they are grappling with.

There is an urgency to the Centre's work, especially as cities everywhere become increasingly dense and crowded. Good city living does not come about naturally, or by chance. Cities must be carefully and thoughtfully planned and developed, and effectively run, in order to be highly liveable.

Singapore is aware of the problems that arise when urbanisation goes wrong. Just 50 or so years ago, the city had just about every urban ill one could imagine—overcrowded slums, widespread poverty, water shortages, poor sanitation, flooding, traffic congestion, crime, and disease. However, Singapore succeeded in turning this around, and is now one of the most liveable cities in Asia and the world.

The Centre is working hard to understand and share knowledge about how Singapore achieved its transformation. As cities mature and aspire towards new goals of walkability, ample green spaces, social inclusion, public participation, and affordability, the Centre is also studying the efforts of cities from all around the world, and sharing their lessons for mutual learning.

This book features valuable insights from the urban development experiences of Singapore and other cities, including New York City, Hong Kong, Copenhagen, Seoul, Rotterdam, and Auckland. I hope that countries and cities across the world will continue to collaborate and learn from each other's experiences, and work together to tackle common challenges like urbanisation. Together, we can make all our cities great places to live in.

How does a city become more liveable? How did a crime-ridden city like Medellín, once labelled by *Time* magazine as “the world's most dangerous city”, turn into the inspirational, socially cohesive place it is today? How did Copenhagen become an exemplar of a people-centric city, with cycling as a way of life and with humanised streets and public spaces where everyone, including children and the elderly, can thrive? How did Singapore, in just 50 years, transform itself from a poverty-stricken former colony into an affluent, modern and effectively governed metropolis?

The Centre for Liveable Cities was set up by the Singapore Government in 2008 to answer these questions. To make liveable cities, understanding the journey and process is key to the outcome.

We have distilled the process behind Singapore's urban development into a framework that outlines how the country achieved its liveability outcomes, which are: a high quality of life, a competitive economy and a sustainable environment. It is the systems underlying these outcomes that are key, emphasising the importance of integrated master planning and development, and a dynamic urban governance. Since its founding, the Centre has built up a valuable body of research centred on this liveability framework and how it relates to Singapore's past and future development. We share this knowledge with anyone interested to learn from Singapore's experience. There is also a lot that we can learn from others, and that cities can learn from one another. We organise the biennial World Cities Summit, which brings together city leaders, industry experts and other urban practitioners, to discuss common challenges, forge partnerships and share solutions.

Our CLC Lecture Series, on which this book is based, is another way we enable learning about liveability. This commemorative publication gathers lectures from some of the foremost urban thought leaders and practitioners we have invited to speak. The book captures their deep knowledge on city issues ranging from housing planning and people-centricity, to environmental sustainability, urban science and trends, heritage and ageing.

Why do these lectures matter? Urban liveability is about real human lives, both present-day and in the future, and concerned thinkers are trying hard to find ways to improve this. This book, as well as our website, documents and shares these insights, not only as an aid to those interested in making liveable cities, but also to inspire more people to get involved. I hope that you enjoy reading it.

# What Will Melt the Ice in Human Hearts?



## HOW AND WHY SHE BECAME AN ANIMAL ACTIVIST

I did not go to university because my family couldn't afford it. Then I got this invitation from a school friend to go to Kenya. I earned my fare by working as a waitress. When I reached Nairobi, I was told that if I was interested in studying wild animals then I must meet Dr Louis Leakey, a palaeontologist searching for the remains of Stone Age humans. He was impressed, I think, because when he took me around the Natural History Museum where he was curator, I could answer so many of his questions because I'd spent so much time reading books about animals and learning about them at the London Natural History Museum.

Eventually, this led to him giving me this extraordinary chance to go to live with the animal that's more like us than anything else. It was a big battle to get the authorities of what was then Tanganyika, part of the British colonial empire, to allow this young girl to go out into the forest. In the end, they agreed if I took a companion.

The volunteer who came for four months was my amazing mother. She was invaluable because she boosted my morale in those early days when the chimpanzees ran away every time they saw me. She was there to point out what I was learning—about the way they made beds or nests every night in the trees, the foods they ate, the kind of groups they formed.

Over the years since 1960, with other research on chimpanzee groups across Africa, we have discovered just how we are like chimpanzees. Biologically, we share over 98% of structural DNA; you can have a blood transfusion from a chimpanzee. There are fascinating relationships in chimp society: in male-dominance strife, interestingly, those that are big and strong tend not to stay at the top very long. But those who are smaller and use their brains sometimes last in this role for six to eight years. Good and bad mothers in chimp society make a big difference in the way the young behave. Chimpanzees are capable of violence and brutality, but also of showing love, compassion and altruism.

In 1986, whilst attending a conference in Chicago, USA, I learned that chimpanzees across Africa were becoming extinct as forests were cut down; they were increasingly hunted for the bush meat trade. I left that meeting as an activist, knowing I had to try and do what I could to save the last chimpanzees and protect their forests. That meant travelling and trying to raise awareness, to help people understand what was happening.

All the problems we find around the planet that have led us into the situation we are in today are interrelated: what was going on in Africa with the poverty and hunger, destruction of the forest, spreading of the desert, increasing lack of water, droughts and floods getting worse, and also ethnic violence, often in competition for scarce resources. So much of this could be laid at the door of developed nations. The lifestyles of many of us are in the long run unsustainable if we don't learn to live in greater harmony with the natural world.

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There's some kind of disconnect between this clever human brain capable of all this extraordinary technology, and the human heart, the seat of love and compassion. The Roots & Shoots programme is about trying to put the head and heart back together.

then realised I needed to travel in the USA and Europe, and increasingly, Asia. The more I travelled, the more I realised how difficult it was to pinpoint exactly what should be done in any given situation unless I looked at it holistically.

The first problem we tackled was sustainable development at the Gombe National Park on the shores of Lake Tanganyika in 1992. Although I realised the deforestation outside the park was extreme, I had not realised it was utterly devastating. The only trees left were in steep ravines where even desperate farmers couldn't try to cultivate, and where women desperate for firewood couldn't climb. How then could we even think about saving these famous chimpanzees—Flo, Fifi, Mike and Goliath, anybody who's seen *National Geographic* movies or read the books knows those names—if the people living around them were struggling to survive?

That led to our programme TACARE (Lake Tanganyika Catchment Reforestation and Education), which includes programmes that work with the local community to improve the lives of villagers around Gombe in a very sustainable way. Local Tanzanians visited each community and learned what they felt they needed. So it was not a bunch of white people going in and saying, "We're sorry for you and this is what we've decided is going to make your life better." It was going in the African way: sitting and listening. They weren't interested in conservation at all. They were interested in education and health.

That's how we began. Then we gradually moved into sustainable



farming methods for this now very degraded land. We worked with groups of women, trying to empower them to improve their lives through microcredit, tiny loans for environmentally sustainable projects, and scholarships to keep girls in school. All around the world, it's been shown that as women's education improves, family size tends to drop. And the reason for the destruction of the forests outside Gombe? More people living there than the land could support. Too poor to buy food from elsewhere. Today, the lives of the people have improved.

NEW SHOOTS OF HOPE FOR DESPERATE YOUTHS

It was not really surprising, given higher levels of education today, that everywhere I went there were young people who seemed to have lost hope for the future. They were depressed, apathetic, bitter, angry, sometimes violent. They more or less said the same thing: "We feel you've compromised our future, and there's nothing we can do about it."

Well, we *have* compromised the future of our young people. I've got three grandchildren. I think of what we've done to this beautiful planet

since I was their age and I feel the desperation. Is it true there's nothing young people can do? Not true. That led to the (Jane Goodall Institute's) global programme for young people of all ages, Roots & Shoots. It began in Tanzania in 1991. In 1995, it went over to the USA and since then, it's been growing very fast.

Roots & Shoots is a symbolic name. A small seed can grow into a very huge tree. The life force in that seed is so strong that roots, to reach water, can work through boulders and eventually push them aside; and shoots, to reach sunlight, can work through crevices

and a brick wall. We think of the wall and boulders as all the problems—environmental and social—that we've inflicted on planet Earth. It's a programme of hope. Thousands of young people around the world can break through and make this a better world for all living things.

What began with 12 high school students on my veranda in Dar es Salaam, overlooking the Indian Ocean, is now a programme from pre-school through to university. It has sprung up in the most unlikely places: in prisons, refugee camps, among the staff of big corporations, in old people's homes. It's now in nearly 100 countries, and has about 150,000 active groups.

Roots & Shoots is about empowering young people to think about all the problems around them. To sit around with friends, identify problems, and work out what you would like to do something about and how. Then, roll up your sleeves and get out there and do it. It is when you start taking action, and see with your own eyes the difference your action can make when you do it with a group of friends, that this hopeless feeling starts to go away.

Humans are incredibly intellectual beings. How come we're destroying our only home? In the old days, among indigenous people in North America and other countries, the elders would gather and ask, "How will the decision we make today affect our people in 10 generations time?"

What criteria are we using today? "How will this affect me and my family now? How will this affect the next shareholders' meeting three months ahead? How will this affect my next

1 Dr Jane Goodall, at 84 years of age, still travels about 300 days a year all around the world, promoting environmental stewardship, encouraging children to become advocates for social and environmental change, and developing anti-poverty programmes in areas nearby to African nature reserves.

2 Founded in 1991 by Dr Jane Goodall, Roots & Shoots is a global programme that aims to inspire youths of all ages to take action to make the world a better place for people, animals, and the environment.

political campaign or job interview?” These are the criteria we’re using. Does it mean we no longer care about our children and grandchildren? No! I’ve been in the homes of CEOs of companies knowingly spreading carcinogenic chemicals into the atmosphere and on to fields. Yet, at home, they’re wonderful loving parents or grandparents.

There’s some kind of disconnect between this clever human brain capable of all this extraordinary technology, and the human heart, the seat of love and compassion. The Roots & Shoots programme is about trying to put the head and heart back together.

I went to the Millennium Peace Summit at the United Nations in New York. There were 1,000 religious and spiritual leaders from 100 countries—an amazing sight, in all their regalia. Almost none of them really talked

about the environment. But the indigenous people from nine countries stood together as a body and tackled the environment head-on. I will never forget the Elder from the Eskimo nation in Greenland saying, “My brothers and sisters, we know every day what you do in the south. Up in the north, the ice is melting. What would it take to melt the ice in the human heart?” And that has stayed with me, more than anything else I heard.

THE LOOK OF A CRY FOR HELP

I’ll end with a story about a chimpanzee, Jojo. Born in Africa, he was caught and sent off to a zoo in North America, where he lived alone for about 15 years. A new zoo director decided to build the biggest enclosure in North America, got 19 other chimpanzees together with Jojo, and surrounded this enclosure with

a moat. Later, a younger male challenged Jojo. The dominant display of the adult male chimpanzee is truly an awesome thing: with hair bristling, lips bunched in a ferocious scowl, throwing rocks, making himself look as big and dangerous as he possibly can. Jojo hadn’t had the opportunity to learn about chimpanzee behaviour, and was so frightened that he ran into the water. Three times he came up gasping for breath, and then he disappeared underwater.

Luckily for Jojo, a man named Rick Swope, who usually visited the zoo once a year, was there with his wife and three little girls. He immediately jumped in even though a keeper tried to grab hold of him and told him he would be killed, that Jojo weighed 130 pounds and could be dangerous. He pushed Jojo up out of the water and he’s sliding in the mud. Just in time, Jojo got a thick tuft of grass, and with

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3 Dr Jane Goodall planting a tree with a group of Singaporean students.

4 An adult and a juvenile chimpanzee embracing. Just like humans, chimpanzees are capable of violence and brutality, but also of showing love, compassion and altruism.

If you see that look and you feel it in your heart, you have to jump in and try to help.

great pushing, managed to pull himself up to where the ground is level. And just in time, Rick got back over the barrier to safety and his family.

A woman had been there with a video camera. That evening, that video was flashed across North America. The director of the Jane Goodall Institute there saw it, and called Rick and said, “That was a very brave thing you did. You must have known it was very dangerous, everyone was telling you. What made you do it?” Rick said, “I just happened to look into his eyes, and it was like looking into the eyes of a man, and the message was, ‘Won’t anybody help me?’”

That’s the look I’ve seen in the eyes of chimpanzee infants whose mothers have been butchered for meat. I’ve seen it looking out from the five-foot-by-five-foot prison cells in medical research labs, where chimps are imprisoned for research use because they’re so like us. I’ve seen it in the

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eyes of elephants chained, swaying from foot to foot. I’ve seen it in the eyes of those in refugee camps, who have seen their families slaughtered. I’ve seen it in the eyes of street children with no homes, caught up in inner-city violence with nowhere to go.

If you see that look and you feel it in your heart, you have to jump in and try to help.

I don’t think there’s a problem anywhere where there isn’t a group of passionate people working for little to no money, risking their health, their lives, to try and put that problem right. And this is what makes me feel that the ice in the human heart, truly, is beginning to melt.

Like what I’ve heard here, with efforts to make this a more sustainable future for the young in Singapore, with technology that can be shared around the world, with the opportunity for meeting with those thinking along the same lines in other countries, using our amazing ability to discuss, and our incredible intellect to create new technologies. But none of it will work if the ice in the heart doesn’t melt. ■

DR JANE GOODALL, DBE  
Founder, Jane Goodall Institute  
UN Messenger of Peace

Story provided courtesy of the Jane Goodall Institute (Singapore). For more information about the work of Dr Jane Goodall visit [www.janegoodall.org.sg](http://www.janegoodall.org.sg). To learn about Dr Jane Goodall’s Roots & Shoots programme, visit [www.rootsandshoots.org](http://www.rootsandshoots.org).

# Global Cities in Times of Crisis



**CITIES MATTER: THEY ARE WHERE “COMPLEX KNOWLEDGE” IS MADE**

First, I want to talk about why cities still matter so much in today’s globalised world, when digital technology already allows all kinds of firms, activities and government institutions to move outside of cities. When I first coined the term “global city” in 1982, people didn’t know what I was talking about. The ancient city of Petra in Jordan fell because trade routes changed. This will also affect cities today. But cities are not just nodes in networks; they are also sites for producing complex knowledge.

One critical issue that explains not only the ascendance of global cities, but also their proliferation, is the problem of incomplete knowledge. Incomplete knowledge has become more complex and challenging, because of the velocity of transaction and change. The cycle of technological innovation no longer corresponds to what we thought of as natural. Now, there can be five cycles in a workers’ work life and the life of a firm. That’s a real issue.

Another issue is firms can be operating in up to 50 countries, each with different cultures of management and different types of accounting and legal systems. The city is not just a node where trade networks and financial circuits intersect. The city fulfils a second function: as a site for producing very particular kinds of complex knowledge.

Let’s call this the “post-Petra urban function”.

**CITIES DON’T COMPETE; THEY JUST SPECIALISE DIFFERENTLY**  
The differences between cities matter. There’s a lot of redundancy in the systems of national economies and global cities. This can be measured empirically for certain sectors, especially finance. We have more difficulty establishing it for other sectors.

Think of an earlier period of international finance, before the deregulations started from the 1980s. Every national economy had its own set of financial functions to deal with international transactions. The

European Union went from having all countries replicate certain routinised functions to remapping the most strategic functions, and so certain cities emerged as critical for certain functions, while others moved on.

There are two propositions I want to demolish: that globalisation homogenises cities and urban economies become more similar, and that cities increasingly compete with each other.

Yes, there’s competition, but far less than meets the eye. A city like Singapore is located with dozens of specialised circuits, and each connects to a particular set of other cities and represents joint platforms. They’re not simply competing with each other. Of course, to some extent, Singapore is competing with Shenzhen in China as a financial centre, and with Hong Kong. Chicago and New York, the two leading financial centres in the US, compete on some level, but actually much less than you might think. They’re simply specialised in different ways.

Some cities are far more able to accommodate a financial crisis to do

The city is not just a node where trade networks and financial circuits intersect. The city fulfils a second function: as a site for producing very particular kinds of complex knowledge.

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- 1 The ancient city of Petra in Jordan fell because trade routes changed. But cities today are not only nodes in a trade network—they fulfil a second function as sites for producing complex knowledge.
- 2 The trading floor at the New York Stock Exchange. New York City is a major hub for global commodity trading in, for example, coffee. But it is not the coffee itself being traded; it is an instrument. The city does not grow a single bean of coffee. This variability adds to the flexibility of urban economies.

**There are two propositions I want to demolish: that globalisation homogenises cities and urban economies become more similar, and that cities increasingly compete with each other.**

It's critical for a large city to use its scale for diversifying the economy. Many cities fail to use all their scalar complexity. In the 1980s and 1990s, New York thought all it needed was to be a leading financial centre. It wanted to eliminate everything else, to transform all buildings into luxury housing or offices. I told the Mayor at the time that you're reducing New York to a plantation economy.

with subprime mortgages, like the one in the USA in 2008, when, on average 10,000 people lost their homes every day due to foreclosures. In São Paulo, in supposedly a poorer country like Brazil, 90% of people own their homes. This is another way of making the argument that specialised differences between cities actually matter.

NO SUCH THING AS "THE GLOBAL ECONOMY"

I would say, as a general statement: "There's no such thing as the global economy." It doesn't exist. What there are, are hundreds of specialised circuits—that's what cities are. You have to break it down to great detail, take all the components of the so-called global economy and see what are the places inside. There are mines, factory districts, and then you also have cities.

That's how I started doing my research on global cities in the 1980s. Cities are messy animals. People say: "Global commodity trading includes New York and São Paulo as major hubs...", but New York doesn't grow a single bean of coffee. It's not the coffee itself being traded; it's an

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Cities should use their multi-scalar quality. I have an impression that Singapore does this very well. You have to. You're going to use every kind of activity. The Singapore economy is a variable, multi-scalar system.

There are other circuits on which cities are located. For example, NGOs fighting for rainforests function in multiple circuits. There may be indigenous people who really know the forest on circuits that include Brazil and Indonesia, the global media centres of New York and London, and the major factory companies and headquarters of sellers. A city is located on many different circuits, and each circuit has other specific

cities. For certain issues, you can have alliances between these cities.

If a major MNC wants to locate in some of these cities, in the 1980s and 1990s this would have been critical for many cities. However, they didn't have network analysis. They looked at the world from their own city's perspective, so they felt they were competing with the rest of the world. That can often lead to short-sighted policy, to giving the city away. Cities like New York and London simply exempted corporations from taxes because they were afraid that they were losing out. By the late 1970s, all these powerful cities were totally bankrupt. Out of despair and fear, they had put in place excessively generous policies.

FROM PIGS TO DERIVATIVES: CREATING URBAN KNOWLEDGE CAPITAL

The knowledge economies of different cities really are different, with very specialised forms of urban knowledge capital. Chicago, Shanghai and São Paulo have deep mass manufacturing economic histories. Out of that comes a kind of knowledge economy. How do

you handle steel? It's not just the material; it's the accounting, finance, insurance, advertising, etc. If a steel mill in the USA wants to go global, you don't go to New York or Los Angeles, you go to Chicago.

The most complex financial instrument we have produced is the derivative. You're dealing with something for which you want to establish a future price. In the free market concept from the 18th century economist Adam Smith, the price is set by producers who are literally able to see each other—think of the village market. In Chicago, way back when the city was producing millions of pigs, you actually had to know the pigs: how were the pigs this year? When were the pigs going to be slaughtered and taken to market? But out of that very material knowledge comes the elements of establishing the future. Chicago invents futures and derivatives out of that material history.

Most countries have their particular material histories. I try to invite people to think of what kind of knowledge they have in common, or still have not pulled out of their own economic history. This presupposes a complex economic history. Rather than thinking: "Aha! I am becoming a global city if I import creative classes because they have creativity," how about understanding what it is that we really know in this culture?

The trick of the knowledge economy is to commodify, then extricate, from the material practices of handling, say, pigs, to a kind of big knowledge—futures. That's an extreme: from pigs to this very abstract financial instrument.

Singapore is different. You have something very material: a state-of-the-art global port, and also a knowledge economy that comes out of that port. Out of those material activities, you've developed a knowledge economy to manage a global port. That means a specialised service economy dealing with finance, accounting, insurance, etc. Now you export that knowledge economy. I was at a meeting in Marseilles about 10 years ago with port directors from all over the world. The people in those countries don't even know that their port is being managed by Singapore. Hong Kong and Singapore are the two leading exporters of this kind of knowledge economy.

There are indeed homogenised built environments, like luxury residential districts and the ultimate shopping malls. But perhaps a sort of confusion has emerged: that these built environments all have a kind of similarity that repeats itself. This then

produced the notion that globalisation homogenises the city.

We recognise that to operate in a global economy, you need a certain measure of standardised accounting and financial reporting standards. And you're going to be outsourcing a lot, which the world has done. Otherwise, nothing will work. This is the problem that happened with the Boeing Dreamliner 787, that's still not out on the market. They outsourced so much of the manufacturing that when they got all the parts back, they couldn't put them together. I love that



Most countries have their particular material histories. I try to invite people to think of what kind of knowledge they have in common, or still have not pulled out of their own economic history. This presupposes a complex economic history. Rather than thinking: "Aha! I am becoming a global city if I import creative classes because they have creativity," how about understanding what it is that we really know in this culture?

3 Different cities have different forms of urban knowledge capital, which produces a particular knowledge economy. Singapore has developed a knowledge economy about managing a global port, and is exporting this globally. Singapore and Hong Kong are the two leading exporters of this kind of knowledge economy regarding ports management.

A global firm does not want one perfect city. It's not like the old empires, where the capital of the empire had to have it all. Right now, depending on what you're after, you go to different places.



story. We can all recognise this. What we've not quite understood is that standardising standards affects the built environment.

Here comes my bit of theory: the built environment has switched systems. We tend to think of an office building as being about office work. The famous first office buildings talked a transparent language: "I'm about office work." In fact, most jobs were routinised office jobs. Nowadays, office buildings don't talk that transparent language. You don't really know what they're making.

What is actually being done inside these offices varies enormously. They will not be competing with each other. All these cities may look like they have the same urban economy, but what they have is similar state-of-the-art infrastructure. Even if all these urban economies look the same, they're not. Singapore and Shenzhen are two examples. There's no perfect global city. Singapore is not perfect either.

A global firm does not want one perfect city. It's not like the old empires, where the capital of the empire had to have it all. Right now, depending on what you're after, you go to different places.

Copenhagen in Denmark has become the Dubai of the European Union. If firms don't need London, Paris or Frankfurt, why not go to Copenhagen? Zurich is another city emerging like that. So, these small European cities have grown in importance.

There's a study for which I was an expert, in which we looked at over 60 variables. None of the leading cities ranks top in everything. If we consider a critical variable such as "ease

of doing business"—rule of law, government and all—London ranks 43rd! That's why Copenhagen, Zurich, Madrid have become significant. And New York is 56th! It is Singapore that ranks number one in some variables.

In the Global South, cities like Mumbai and São Paulo are in the top group for financial and economic services, but are brought down to about 60th position by low rankings in factors related especially to liveability. My argument to corporate audiences relates to the social questions: How you handle your population, or excessive homelessness, affects the corporate temperature. A firm that's going to have a large labour force with multiple types of workers wants a reasonable setting. Again, that's why small European cities are gaining ground over American cities. ■

PROF SASKIA SASSEN  
Robert S. Lynd Professor of  
Sociology, Columbia University, USA

4 Small European cities have grown in importance. A global firm does not want one perfect city—depending on what it is looking for, it may choose to go to Zurich (pictured) instead of London, Paris or Frankfurt.

# THE SINGAPORE WAY TO PLAN A CITY

Singapore adapted western theories to its culture and environment, building “a city developed by Asians in Asia within one generation”.



The government’s planning efforts have transformed Singapore into what it is today. By overcoming challenges in developing master plans, the city-state has created world-class amenities, while preserving historical memories.

Dr Liu said this required understanding the fundamentals, drafting and implementing good rules and regulations, ensuring faithful enforcement, respecting and protecting the process, and systematic improvement of the master plan. He sees a master plan as a “machine for living”—the correct placement and connection of elements in a city being similar to the assembly of machine parts. Self-belief is crucial, he said, citing how Singapore dared to go against world trends with high-rise public housing in the 1960s.

Singapore adapted western theories to its culture and environment, building “a city developed by Asians in Asia within one generation”.

“Good planning can let you have a cake and eat it,” said Dr Liu as he outlined the five layers of planning: the Basic Structure allocates land use for different city elements based on function; the

Nature layer considers green spaces; the Heritage layer strikes off areas for conservation; the Grid layer includes expressways and public transportation lines; and the Organs includes a Central Business District, housing, industries and utilities. The government’s obligation to lead with its planning role is like creating a beautifully working stage on which people “create life’s drama”.

Dr Liu sees three possible planning approaches: to plan what we like, what we can, or what we must. The first two are seductive, soft options that require little hard work or know-how. The challenge is to commit “to plan what we must” by understanding the people’s needs, and then connecting visions to sound plans.

With clarity and understanding of core principles, combined with the courage and conviction to value its achievements, Singapore will continue to challenge world trends and stay relevant, said Dr Liu. ■

DR LIU THAI KER  
Founding Chairman, Centre for Liveable Cities  
Chairman, Morrow Architects & Planners

# FROM CARE TO LIFESTYLE: AGEING IN INCLUSIVE CITIES

“Rather than hire professionals to do everything for older people, we should create a support system in which healthy older people can help other older people. You have to start creating a social capital system.”



Cities need to make themselves more accessible for the elderly, and it is not too late to start now, said Dr Kiyota. If the elderly cannot walk in the city, they would exercise less, she added, and clinical health would be compromised and become an economic burden.

Walkable cities also foster connectivity. This is crucial in helping communities have an identity, as people living in poorly connected places tend to be withdrawn and they stay at home. Thus, providing an environment for the elderly to walk will not only help them stay healthy, it will help them stay connected with one another, said Dr Kiyota.

Cities should also rethink the building of nursing homes for the elderly, an urban solution which Dr Kiyota argues is something their “immune system” might reject. “I have never actually seen any nursing home work in any city, but somehow we just keep building them because a lot of governments think it is the easiest, most efficient, most convenient and cheapest option,” she said.

“Rather than hire professionals to do everything for older people, we should create a support system in which healthy older people can help other older people. You have to start creating a

social capital system,” she added.

Another urban solution that needs reconsideration is the need for technology that is easy for the elderly to use. Besides age-related challenges such as physical, sensory and cognitive impairment, there is also social impairment. Some people become “paralysed” by the lack of access to technology, she said. “People think that if you can stay at home with a home-care agency, you are okay, but if you cannot go out for basic services, like the grocery store or clinic, you actually are quite socially paralysed.”

As part of Dr Kiyota’s efforts to empower the elderly, she conducts many workshops through her non-profit organisation Ibasho to gather the input from the elderly and help them build a sense of ownership. This also creates opportunities for them to talk with one another. “People get excited to see a building built because everybody feels they helped design it. We have to really move from care to lifestyle,” she said. “Rather than just caring for people with dementia, what kind of lifestyle can we help them re-create?” ■

DR EMI KIYOTA  
Founder and President of Ibasho, USA

# ENVIRONMENTAL HEALTH GOES HAND-IN-HAND WITH ECONOMIC PROGRESS



ENVIRONMENTAL HEALTH IS CRITICAL FOR THE ECONOMY AND COUNTRY

By the early 1970s, we knew that the environment must play a critical role in the development of Singapore. Economic progress then was the priority; it always is. But for us to succeed economically, we must have a good, clean environment.

We depend on foreign investors in Singapore, but who's going to come here if the environment is not up to the mark? The competition around us is so great—Malaysia, Indonesia, Vietnam, so many other countries to go to. We've got to distinguish ourselves so we can have that added factor to attract foreign investment. Environmental public health is a very broad area. It covers air, land, water; issues like food safety and hygiene;

vector control; the building of infrastructure to supply potable water, collecting and treating all waste water; and the collection and disposal of solid waste. We want Singapore to be totally different. A high standard of environmental public health is critical to our economic survival.

Mr Lee Kuan Yew [Singapore's first Prime Minister] was always promoting it along these lines. That's why we had the Anti-Pollution Unit attached to the Prime Minister's Office, to give it a similar status as economic progress. There were many issues to resolve. At times, we were at loggerheads with the economic programmes. Even as we industrialise, we must not pollute the island we live in.

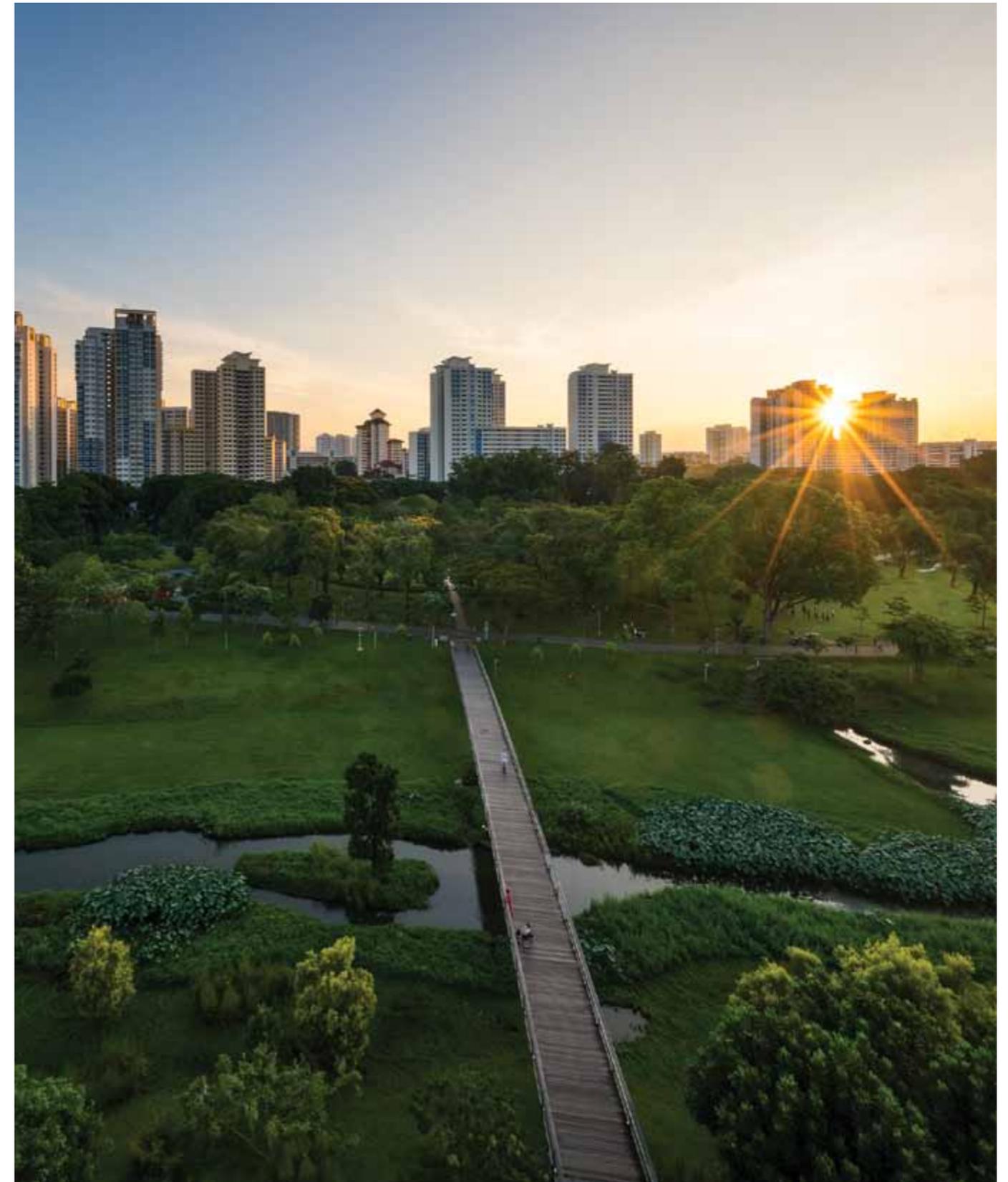
We understood how, as a small country with no resources, if we do not handle economic progress and care for the environment correctly,

we will spiral down. If we do this well, we have a chance of spiralling up. There's no midway, no equilibrium point.

Environmental public health is still extremely valid for Singapore today. Unlike in other countries, if there's an epidemic here, you cannot, say, seal off Katong. We've got only one densely populated city, with nowhere else to go, so environmental public health is our only safeguard against infectious diseases. We're jolted into action when we have outbreaks like SARS (Severe Acute Respiratory Syndrome), when suddenly, people were afraid even of [touching] lift buttons.

Today's situation is different; there are more areas to cover. But these are the basics that have not changed. It was a great challenge in the past. We had approximately 21,000 squatters

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We understood how, as a small country with no resources, if we do not handle economic progress and care for the environment correctly, we will spiral down. If we do this well, we have a chance of spiralling up. There's no midway, no equilibrium point.

without sanitation, without proper water supply and refuse disposal. Everything went down the drain, into the rivers. Another 15,000 premises in the city used night soil buckets, which only took solid waste, so the rest went into the drains. So, you can imagine the pollution and disease. It was a recipe for disaster. We were fortunate that we had political support from the very top. Without the vision of Mr Lee, we would not have been able to achieve the high standards of environmental public health we enjoy today.

CONFLICTS BETWEEN ENVIRONMENTAL AND ECONOMIC AGENDAS

There were areas of serious conflict. For example, we knew that having a petrochemical complex would be highly polluting, but had no idea how to control it. We insisted on examining the companies' plans, but what could we tell from plans? They had their experts; we employed our own consultants. There was a lot of give-and-take. But on critical issues where you know you cannot compromise, you've got to stand firm.

To your surprise, you'll find that the other side will eventually come round, because back home that's what they do too! They're quite used to it. If you don't, they will say: "Ah, these guys can be taken for a ride."

In the early days, we had diesel piling hammers, which were terrible—diesel is pumped into diesel engines, then it explodes with black smoke all over the place! We were wondering how to modify the design, and it just couldn't be done. Then one day, when we visited the country that exported these piling hammers, we found that they were banned there! They were made for export. So, without hesitation, we banned them in Singapore. As easy as that! We must always set international standards. Manufacturers will understand that.

There was also good cooperation amongst government agencies. From the start, they understood that the environmental agenda was for our own good. Fortunately, conflicts were all happily resolved. At the end of the



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1 Bishan-Ang Mo Kio Park in Singapore, a spacious green lung in the heart of the country. Singapore understood that, as a small city-state, its liveability and sustainability would depend on its ability to manage economic progress while caring for the environment.

We plan for the next 15 to 50 years. For water, we plan for 100 years, for the country's ultimate development. We need to have the stamina to see it through.

day, we shook hands across the table because we were all looking out for Singapore's long-term good.

Political leadership, however, was crucial. As an example of where we needed good political leadership, to our horror, one day, we found an army camp built next to highly polluting quarries. We went to the Minister for the Environment, and said: "Somehow or other, this slipped through." I still remember his remarks: "The army camp has to [move] because it's not a

hotel. The national service boys have no choice but live where we tell them to live." A simple statement, and the matter was settled. It takes political courage, determination, just to say such words.

LONG-TERM MISSION, SHORT-TERM ADAPTABILITY

For the basic issues that will always be with us—clean water, clean air, clean land in terms of solid waste management—long-term planning

has to come in. You cannot plan just for the next five years.

We plan for the next 15 to 50 years. For water, we plan for 100 years, for the country's ultimate development. We need to have the stamina to see it through.

There's a lot of excitement cutting ribbons for projects. But [for these basic issues] it's more than a policy, more than a programme, more than a project. There's a mission to accomplish, so we have to be mission-driven. You need people with a passion for that mission. You need people who work long-term as well as who pay attention to short-term details. A good example amongst the old-timers is Tan Wee Kiat, former chief of the National Parks Board. The greening of Singapore was in his hands. I've never seen anyone as committed to a mission as he was.

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2 The SARS (Severe Acute Respiratory Syndrome) epidemic began in China and first affected Singapore in 2003. In all, 238 cases were detected in Singapore, and 33 people died from the disease. Singapore acted decisively to combat the spread of SARS, and successfully contained the disease by May 2003.

3 In the 1970s, the Singapore River was severely polluted by waste from squatters, street hawkers and farms, prompting government intervention to clean it up. Today, the Singapore River has been rejuvenated as a thriving attraction in the heart of the historic Civic District.

It was a real social issue. For this, you have to bring in the politicians; it's 80% their job. The civil servant must be politically sensitive, but must never try to be a politician.

You also have to be ready for new situations arising. For a long time, we were not satisfied with what was going on in our wet markets. Housewives liked to select chickens they had seen alive in a market coop, and warm meat such as pork, beef and mutton was left around in the markets, covered with flies. Then animal-borne diseases spread from abroad. Suddenly, we woke up and, within six months, revamped the whole system to the cold-chain system. Chickens and pigs had to be slaughtered in abattoirs, chilled and taken to the market to be sold chilled. Each stallholder had to fork out S\$700 to S\$800 to buy a chiller. Some stood firm and refused right up to the last day, before they buckled. We heaved a sigh of relief. We were really anxious: what would we do if they challenged us? There would be a political uproar.

The challenges ahead are far more than the basic challenges of the 1970s to 1990s. It'll be the same issues but "softer", and transformed—not just clean air, water, land, but now climate change, clean energy, clean and green issues. For these, you'll still need people with a vision, who are mission-oriented. This is critical for our long-term future.

POLICY POSITIONS:

YOU WIN SOME, YOU LOSE SOME

Of course, we didn't have our way all the time. We wanted to clean up Kallang Basin completely—the shipyards at Tanjong Rhu were very polluting, and there was no way you could clean up a shipyard. But the Economic Development Board had their own arguments. Finally, they prevailed. We backed down as we knew it was only a matter of time, and time has spoken. Today, the shipyards are gone. One regret is Benjamin Sheares Bridge, built because of the shipyards, for ships to pass under. But maybe it's not a total mistake, because from the Bridge we can see the skyline and city.

There were issues where we partially succeeded. We wanted pig farms out of Singapore completely. With a quarter of a million pigs, the waste produced was like 2.5 million people defecating into reservoirs. But the Primary Production Department at that time disagreed that we should phase them all out completely, so they were re-sited to Punggol. The most modern plant to treat pig waste, with United Nations experts' help, produced effluent no cleaner than raw sewage. The farms were eventually removed at great expense because the government had to compensate the farmers.

One policy where we succeeded but realised it wasn't all that good, and then learned along the way, was in our discussions with the Housing & Development Board (HDB). They were intent on building high-rise residential blocks inside our unprotected water catchments, and we were afraid that our reservoirs



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would get polluted. We went to the Cabinet and argued our case. Finally, we reached a compromise to reduce housing density in Bukit Batok [in Kranji Reservoir's water catchment area] by about half. But later studies we did found that—with pollution control measures in place—we can have high-density housing development and the reservoir water will still be clean.

RESETTLING HAWKERS:

MANAGING THE COMMUNITY

The hawker resettlement programme is a good example of managing the community. In those days, there were 5,000 to 6,000 street hawkers. The first

thing we did was to license them to cap the numbers. We wanted to put a stop to the growing number of street hawkers. So, we sent our inspectors down. Each time we saw a street hawker for that week, we told him: "Here's your licence." He was delighted that he got a licence. After one week, we knew who the licensed ones were. Any street hawkers without a licence after that week were illegal hawkers to be removed.

Then we had to resettle the licensed street hawkers and that was the difficult part—livelihoods were involved; they had to start their business all over again.

It was a real social issue. For this,

4 Singapore began resettling street hawkers into hawker centres in the 1970s, as part of the broader effort to improve public hygiene, by providing access to proper waste disposal and clean water.



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you have to bring in the politicians; it's 80% their job. The civil servant must be politically sensitive, but must never try to be a politician.

We had an excellent Head of the Hawkers Department, who built strong rapport with every Member of Parliament (MP). They trusted him and had faith that he would deliver what he promised. Without him, I think the hawker resettlement programme would perhaps have faltered. It would not have succeeded so readily. MPs in affected constituencies did a marvellous job explaining the benefits to the hawkers. The balloting was done by the MPs; everybody understood it. We built the hawker centres and re-sited them. Eventually, we succeeded, but not without a lot of heartaches. To the credit of the MPs, they were willing to bear the political repercussions. They were strong enough to carry the ground on this.

Newton Hawker Centre is a good example. The hawkers were re-sited from Cuppage Road, where there was a Cold Storage milk bar. The street hawkers occupied the car park next to Stamford Canal and they were terrible, throwing trash into the canal every night.

When it came to relocating them to Newton Hawker Centre, at first none of them wanted to go. They complained, organised themselves, and were badgering and lobbying. They said that if they went there, their business would be seriously affected and who was going to take care of them? That was how it began. So, we forced our way through and re-sited them, amid lots of grumbling. Nobody was happy. But the MPs stood by us

and they carried the ground. A year after they were re-sited, none of them ever complained again! That was the history of Newton Hawker Centre.

So, let civil servants be civil servants. Plan properly, get the vision and mission correct, and convince the MPs that it is for the good of everyone. Then let the MPs do their work. The two must go hand in hand—the civil servant and the politician. ■

**TAN GEE PAW**  
Former Chairman, PUB, Singapore  
Former Permanent Secretary,  
Ministry of the Environment,  
Singapore

5 Jurong Island, located southwest of the main island of Singapore, is one of the top global petrochemical hubs today. Singapore took a tough stance from the beginning of its urban development, insisting on good environmental standards to prevent pollution from highly pollutive industries.

# TRANSPORT PLANNING: KEEPING SINGAPORE MOVING



## SINGAPORE'S FIRST LONG-TERM TRANSPORT PLAN

The days after

Singapore's independence in 1965 were a time of turmoil, trying to run Singapore without a hinterland. The car population was growing very rapidly. Many roads were congested. We had very poor bus services. There were 10 Chinese bus companies and the Singapore Traction Company for the whole of Singapore. Some only had a handful of buses. They each had their own areas of operation, tariffs, ticketing systems and routes. Travelling over any significant distance required a transfer of up to three bus services. Such a situation was not tenable.

It was very fortunate that we had a government wise enough to see that if public housing and industrial development took place without also addressing long-term traffic problems immediately, there would be chaos.

The only transportation work done was very modest road-building by the Public Works Department, addressing bottlenecks in the city and immediate suburbs. The only transport problem addressed was a shortage of car parking, as if parking requirements were the be all and end all. So, we built car parks like the most famous one at Market Street—the first, and probably one of the last, URA (Urban Redevelopment Authority)-owned car parks in the city area.

Against this backdrop, the government recognised that there must be a comprehensive set of policies addressing land-use and transport development, and also a proper assessment of the relative roles of private and public transport. In 1968, it got a S\$4 million grant from the United Nations Development Programme (UNDP) for a four-year study, the State and City Planning Project (SCP), to be conducted by an Australian consultant and UNDP project director. This study was

the pioneer of all land-use and transportation studies in Singapore. It included land-use surveys, comprehensive home interviews, traffic counts and floor area surveys of homes, buildings, offices and warehouses.

There were two deliverables. One was a concept plan, to guide Singapore's physical development for the population to grow from 2.4 million then, to 4 million. The other was a transportation plan, to address road development and the longer-term relative roles of cars and public transport.

## FOUR TRANSPORT STRATEGIES STILL RELEVANT TODAY

At the end of the study in 1971, four transport strategies emerged, as follows: *[Editor's note: The policies have since evolved. For example, cycling and a "car-lite society" have been promoted since the mid-2010s. Zero growth for motor vehicles was announced in 2017.]*

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1 In 1991, the first major review of Singapore's concept plan was launched. Planners envisioned Singapore's long-term development 30 to 40 years into the future, developing transport plans and integrating them with the land-use plan.

2 An aerial view of Bishan Bus Interchange in Singapore. Planners are now studying how to intensify land use for such transport facilities, for example by integrating them with a mixed-use development.

3 A bus plying its route along Orchard Road in 1970. Bus services back then were inadequate, leading to major long-term plans to improve public transport, including the decision to develop a rail system.

It was very fortunate that we had a government wise enough to see that if public housing and industrial development took place without also addressing long-term traffic problems immediately, there would be chaos.

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(1) TO INTEGRATE LAND-USE AND TRANSPORTATION PLANNING DEVELOPMENT

Clearly, the old five-year master plan was no longer valid. What was required was a very long-term forecast of land-use projections and transport requirements.

(2) TO EXPAND THE ROAD NETWORK

We would have to build many more roads to handle population growth.

(3) TO MANAGE VEHICULAR TRAVEL DEMAND

This very important strategy has served us well. The SCP's long-term forecast showed that, if current car ownership was allowed to grow as in the 1960s, the car population would become so big, and travel demand so bad, as to become untenable. For example, some models forecasted that the 1992 city area would require nine to 16 traffic lanes per direction. From this came the recommendation that, before the 1990s, there would be a need to curb car ownership for the whole of Singapore, and car usage in the city area.

(4) TO IMPROVE PUBLIC TRANSPORT

The 11 bus companies of the 1960s were unacceptable for the long term. Very drastic improvements had to be made.

The early planners were very exhaustive in their studies. By the time we concluded in the late 1970s, we were very certain we needed a heavy rail system, and that the routes explored were the right ones to build.

On curbing car ownership, the government took the SCP recommendations very seriously.



From October 1972, it introduced tax measures on car ownership, with very steep import duties and road taxes. It also introduced the additional registration fee (ARF), imposed on first purchase. In the early days, ARF and import duties seemed to suffice. Unfortunately, vehicular growth was irregular and not well-controlled.

Around 1990, the Certificate of Entitlement (COE) was invented, and became a feature of car ownership control—you pay what you can afford for the privilege of owning a vehicle. The advantage for the government is that, by having COEs set numbers to the last vehicle, ownership growth control is very accurate. I don't think anybody else can match us in this.

Is the COE bad? Yes, sometimes prices can be very high, but that's the price you pay for living on a very small island, and we pride ourselves on keeping road traffic smooth. When traffic speeds get too low, up goes the

Electronic Road Pricing (ERP) price. If speeds go up, like during school holidays, down goes the ERP price. So, it's not the government, but motorists themselves, who set ERP rates.

The park-and-ride scheme was born as an alternative for people who didn't want to drive into the city, because public buses were really quite rotten in those days. But the scheme failed miserably. We had 7,500 car parks that we had to find alternative uses for. However, because we did offer an alternative, it was a political success. ■

JOSEPH YEE  
Former Director of Planning and Transportation, Land Transport Authority, Singapore

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4 Stadium MRT Station on the Circle Line, designed by Singaporean architectural firm WOHA.

It was a really exhilarating time. We envisioned Singapore's long-term development, what shape it would take 30 to 40 years into the future, and helped develop the transport plans and integrate them with the land-use plan. This was really active planning at work.

ACTIVE PLANNING—INTEGRATING TRANSPORT AND LAND-USE PLANS

From this key SCP study came transport studies that looked at how to develop the expressway system for Singapore, comprising the Central Expressway (CTE), Kallang Expressway (later Kallang-Paya Lebar Expressway, KPE), East Coast Parkway (ECP), Ayer Rajah Expressway (AYE) and part of the Pan Island Expressway (PIE).

My first direct involvement was from the 1980s, when the Northeast Sector Study was done. Under the SCP plan, it was not envisaged that the northeastern part of Singapore would be developed for high-density residential development. It was called Kang Kah Area and Punggol Area. Subsequently, as the population grew, another study was done to see whether, and how, we should develop this area for housing. Arising from this, we worked on two key transport infrastructure projects—the MRT's North East Line, and Kallang-Paya Lebar Expressway (KPE).

In 1991, the first major review of Singapore's Concept Plan was launched, led by the URA under Dr Liu Thai Ker. I had the privilege of working with him. We spent many long hours into the evening at URA, trying to thrash out all the issues—all very professional and friendly debates between us and the land-use planners.

It was a really exhilarating time. We envisioned Singapore's long-term development, what shape it would take 30 to 40 years into the future, and helped develop the transport plans and integrate them with the land-use plan. This was really active planning at work.

The next significant long-term planning was after the formation of the Land Transport Authority (LTA) in 1995. In 1996, we published a White Paper on land transport. This enunciated the long-term vision, including a significant expansion of the MRT. We then worked on preparing a rapid transit system master plan to guide the expansion of the rail network.

While the MRT system was mooted in the SCP, the North East Line was planned in 1985 but implemented quite a bit later—it was opened in 2003. It is one thing to plan early, but implementation has to tie in with other developments.

With the MRT plan in place, the government started looking at the development of other parts of Singapore. For example, in the early days, people were rather reluctant to go and live in Woodlands because the MRT had not reached the northern part of Singapore at that time. So, the government decided to develop the MRT system—the MRT line was taken to Woodlands, making a loop around the central catchment area, to tie it in, so that people could also easily travel to the western and eastern parts of Singapore.

Transport infrastructure needs to be tied together with land-use planning, and the timing of it. The success of Singapore's public housing programme depended, to some extent, on the connectivity provided by the MRT to link up various parts of the island. Long-term, forward-looking planning is key—guided by a clear vision of the city Singapore wants to become. But planning also requires sustained implementation of policies, some of which may not be popular, in order to stay on top of problems. ■

MOHINDER SINGH  
Head, Transport Planning,  
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Advisor & Former Dean,  
LTA Academy, Singapore

We decided not to exempt anybody except buses and emergency vehicles. Even the President had to pay.

INTRODUCING THE WORLD'S FIRST ROAD PRICING SYSTEM

When we were talking about road pricing in the 1970s, we looked at two reports. One was the first established study in 1964 from the United Kingdom Department of Transport. The other was from the US-based Institute of Transportation Engineers. We relied on these two reports to come up with the Area Licensing Scheme (ALS). There were five policy aspects: (1) land-use planning; (2) the network; (3) traffic management; (4) public transport; and (5) road pricing.

The most difficult challenge was convincing people to pay. They all thought it was just to raise revenue. They were prepared to pay for water and electricity, but not for road usage. We couldn't sell it just as road pricing; we really had to sell it as a package.

The first issue was the boundary: Everybody wants to be outside the ALS. To lock in the boundary, Joseph Yee and I walked to look at every spot. We didn't want to include housing areas, so it was mostly businesses and offices. The next issue was: what price to charge? Nobody had done road pricing before. At that time, in 1975, if you came into the city, you paid S\$3 to park (your car) for the whole day. The next issue: who to charge? Everybody wanted exemptions: "I'm a doctor, I have to come to town", "I need to work in the city" and so on.

We decided not to exempt anybody except buses and emergency vehicles. Even the President had to pay.

We started out with cars and taxis only, because we wanted to make sure that those who cause congestion would pay for it where they cause it. Later, we extended it. At that time, our

biggest nemesis was the Automobile Association (AA) of Singapore. They called us "restrictionist mandarins", who just sat there and put in schemes. I was surprised, three to four years later, that in one Federation Internationale de l'Automobile conference, the AA admitted that the ALS had improved our traffic situation.

The other problem was, when you put in the S\$3 charge, traffic decreased a lot, and people said it was overkill. We felt it's better to set a higher price and lower it from there, rather than start off lower and raise it. I don't think we ever got the price right. One complaint was, "If I'm poor, I cannot come in." So, we said, "If you carpool, three plus one, you can come in for free." A lot of people came in by carpool, almost 50% of total traffic into the city. But then we found it was not carpooling. Carpooling means all four persons have a car and only one uses the car. But it was actually hitchhiking—(drivers) went to bus stops and picked up (passengers). As time went on, the bus companies complained: "Look, you're taking my passengers." So, in 1989, we removed carpooling. The best part is, we used to get a lot of visitors to see the system. They couldn't believe there was not one reported crime incident in 14 years; that people dared to go into strangers' vehicles—no molest, nothing.

For Electronic Road Pricing (ERP), at first, people didn't like the scheme. A lot of red herrings were thrown up. They said, "You're using radio waves, it will cook me if I go under (the ERP gantry)." "If I'm using a heart pacemaker, it might stop, I might die."

"If I have a hearing aid, I may go deaf." We had to prove that these things were not a problem.

Next, Lamborghini and Ferrari owners said, "We've got very special electronic equipment. Once they go under your system, it'll fail." One day, we got all of them to go under the system to prove it didn't fail. Finally, some people said, "When there's an accident, the IU (in-vehicle unit) will hit my face." We even simulated a crash to show that it wouldn't come off. We had five million runs to prove the accuracy of the system. People still don't like ERP, but it's been taken as a necessary nuisance.

What do all transport system users want to know? Simple—four things: (1) Can I get from point A to point B? (2) Can I do it safely? (3) Can I do it in a reasonable time? (4) Can I do it at a reasonable cost? If you're a transport planner or traffic engineer, just remember these four things. If you meet them, you've succeeded. ■

ASSOC PROF GOPINATH MENON  
Member, Public Transport Council, Singapore  
Former Chief Transportation Engineer, Land Transport Authority, Singapore

5



5 Singapore's Electronic Road Pricing (ERP), implemented in 1998 to improve traffic congestion, was the world's first electronic road pricing system.

# From “Garden City” to “City in a Garden”

National Parks Board surveys show that 80% of Singaporeans are proud of this “Garden City”. A “City in a Garden” will be an improvement on this, with initiatives ranging from a 150 km round-island cycling route to coral nurseries.



The whole concept of greening was to “make Singapore interesting” and not a concrete jungle, explained Dr Chua, former Commissioner of Parks and Recreation. Thus, nature was conserved, from coastal mangroves to “long-grass areas” as bird sanctuaries. Depleted wildlife species were re-introduced. Parks were connected for cycling and walking. More shade trees made for cool walks. In 1981, Prime Minister Lee Kuan Yew initiated planting of fruit trees in government institutions and schools to inculcate social discipline, for people to respect public property. All this was to help keep alive his dream for Singapore to become a green, shady city worthy of an industrious people who also appreciate the beauty of nature.

Today, bringing more biodiversity to people and bringing people closer to biodiversity remain the twin key aims of the National Parks Board (NParks), said CEO Poon Hong Yuen. NParks surveys show that 80% of Singaporeans are proud of this “Garden City”. A “City in a Garden” will be an improvement on this, with initiatives ranging from a 150 km round-island cycling route to coral nurseries. All this is possible because of NParks’ unusually strong culture of pragmatic experimentation typical of Singapore’s civil service in a “nation of doers”. “Just get it done, then study and monitor. If it works, roll it out even more. If it doesn’t, roll it back,” said Poon. In the future,

even more green space will be needed for a good living environment with the psychological relief of a sense of “spatial-ness”. Some 85% of the population will be living within 400 m of a park, and businesses will embrace vertical and skyrise greenery for more distinctive buildings. Meanwhile, citizen ownership will be boosted to grow the number of community gardens from 600 to 1,000.

For Nature Society President Dr Shawn Lum, a “City in a Garden” entails preserving biodiversity and involving the public, simply because nature makes life “much more wonderful and magical”. This means protecting and managing the landscape to maximise a sense of place, greenery’s cooling effect, and the ecosystem’s aesthetic and cultural effects, including not wanting to be the “weak link” to “break the chain” of millennia-old stopover points for migratory birds. It also means getting people to overcome their “intrinsic uneasiness of co-existing with nature” with more education and engagement. ■

DR CHUA SIAN ENG  
Retired Former Commissioner,  
Parks and Recreation Department, Singapore

DR SHAWN LUM  
President, Nature Society Singapore

POON HONG YUEN  
Former CEO, SPRING Singapore  
Former CEO, National Parks Board, Singapore

# India’s Cities Cry Out for Infrastructure

India has a great deal to learn from Singapore in areas such as water, waste-water management and transport.



At 32%, India’s urbanisation is much lower than in China (48%) or South Korea (83%). By 2031, India’s urban population of 377 million today is expected to increase to 600 million, and the number of metropolitan cities is expected to rise from 53 to 87. Citing these figures, Dr Isher said there are many unofficial urbanised areas “crying for urban infrastructure”, but lack the authorities’ support in having their needs represented.

Since India opened up to foreign investments in 1991, cities have become the engines of growth. But there hasn’t been a similar increase in employment, which has led to urban sprawl and an overall poor state of service delivery. Local and city governments lack predictable transfers of funds, as their mandates are not funded. Finances have been a major problem affecting their capacity to plan and execute.

India is in a demographic “sweet spot”, with half the population under 25 years of age. But it needs to create more opportunities for its youth. In 2005, the Indian federal government began to

nudge state and local governments to guide them in planning and management. The Jawaharlal Nehru National Urban Renewal Mission was set up to provide co-funding. There is still a lot of backlog in planning and reform: While India may not be able to do it “the Singapore way”, it can do it in “parcels”, said Dr Isher. She had no doubt that there is a great deal to learn from Singapore in areas such as water, waste-water management and transport.

Dr Isher was struck by two things about Singapore: First, its power of “soft governance” to persuade citizens that current conditions are disastrous for future generations; and second, the public sector’s “no wrong door” policy, particularly in e-government services, because the Singaporean public expects to be given information and not be turned away. ■

DR ISHER JUDGE AHLUWALIA  
Chairperson, Board of Governors, Indian Council  
for Research on International Economic Relations  
(ICRIER), New Delhi, India

# UNCONVENTIONAL WAYS TO LAUNCH INDUSTRIAL TOWNSHIPS



BATAMINDO  
INDUSTRIAL PARK,  
BATAM, INDONESIA:  
JUST DO IT

In January 1989, we had a big Singapore–Johor meeting. The next month, the Indonesian Ambassador walked into my room at the Economic Development Board (EDB) and said: “Why don’t you look at Batam?” I had never been to Indonesia. So I went to Batam, and found a place near a reservoir. I then went to see Dr Goh Keng Swee—then Deputy Chairman, Monetary Authority of Singapore—and said, “Shall we look at this project?”

I took him to Batam, straight to the 500 ha location I had chosen. I wanted to build an industrial park there because labour costs in Singapore were killing us, with workers’ levies and quotas. Dr Goh

had earlier advised me to go to the Pearl River Delta in China, but that’s too far. He said, “This is a good location, so what are you going to do?” I said, “Tomorrow, I start work. I don’t plan, you know? I act. I’m the antithesis of planning.”

The Batamindo Industrial Park in Batam started in January 1990 with a signing ceremony, and we held the groundbreaking the next month. In August 1990, just nine months later, 10 buildings had come up.

INTERNATIONAL TECH PARK,  
BANGALORE, INDIA:  
SELF-CONTAINED,  
SELF-SUFFICIENT PARK

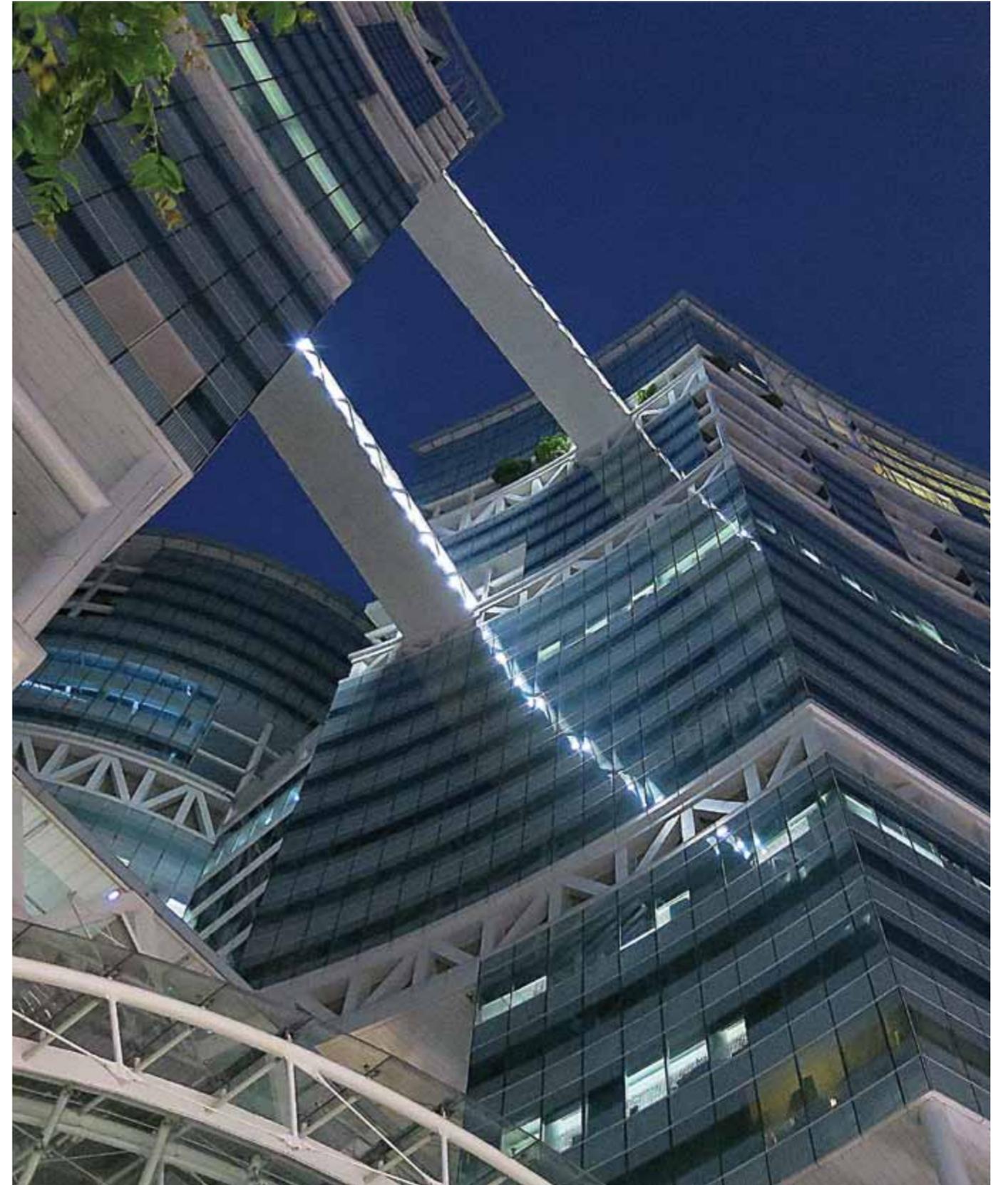
P. V. Narasimha Rao, then India’s Prime Minister, came to see then Prime Minister of Singapore Goh Chok Tong, asking, “Can you do

something in India the way you’ve done with Batam?” So, the “arrow” came to me to do something about it. I didn’t know anything about India. I had never been there.

I called Indian industrialist Ratan Tata, a good friend of mine for many years. He said, “Come to Bangalore.” I said, “You must be my partner.” He replied: “I’m not involved in industrial parks, but okay, I’ll come with you.” I asked for 100 ha in a place called Whitefield. We only received 69 ha.

In 1996, we broke ground. Our land title was freehold; in China, our leasehold was only 50 years. We officially opened International Tech Park Bangalore (ITPB) in 2000. In India, we have our own power supply, sewage, everything. What we can depend on is within the ITPB borders—there’s no trouble.

1



“Tomorrow, I start work. I don’t plan, you know? I act. I’m the antithesis of planning.”

2



- 1 Biopolis, created as an international research and development centre for the biomedical sector, contains 3.5 million ft<sup>2</sup> of space for biomedical science laboratories. It also has retail and dining options, and nearby private residences.
- 2 International Tech Park Bangalore (ITPB), officially opened in 2000, contains land for a Special Economic Zone (SEZ), executive apartments, a hotel, and a shopping mall. It was conceived in 1992 after a discussion between then Prime Minister of India P. V. Narasimha Rao and then Prime Minister of Singapore Goh Chok Tong. It has since become a model for other similar tech parks in India.

First, we restarted with 1,000 ha, focusing on creating jobs. From jobs, you create home demand, commercial, housing, the rest. I think there are over 400,000 people in Suzhou Industrial Park now.

3



India is easy [to work with] because the law is in English.

At ITPB, there's a shopping mall, executive apartments, a hotel and land for a Special Economic Zone (SEZ). The plot ratio is very high—my original building plan was 22 storeys. Everybody asked me: “Can you be more moderate?”, so I dropped it down to 12, 13 storeys. These 69 ha are self-contained, with almost 27,000 people—all young graduates, no blue-collar workers. After nearly 20 years, ITPB still has another 30 ha left.

In August 2007, ITPB, together with our other IT parks in Hyderabad and Chennai, was listed on the Singapore Stock Exchange as Ascendas India Trust ([www.a-itrust.com](http://www.a-itrust.com)).

INDUSTRIAL TOWNSHIPS IN WUXI, VIETNAM AND SUZHOU: START BY PROVIDING JOBS

Wuxi Singapore Industrial Park (WSIP) was not my idea. The Wuxi City municipal government asked Dr Goh Keng Swee to be their advisor. For two years, they bugged me. I said, “I’m busy in Indonesia, give me a break.” Later, when I decided to go, I went straight to the piece of raw land. No study, evaluation, option—we just started work. I told the Wuxi party secretary who met me: “This land, we start signing next year.” The rest is history [WSIP opened in 1993]. This was before the China–Singapore Suzhou Industrial Park (SIP). Shanghai, as an industrial city, was too expensive, so all industries had to move out. Wuxi is basically a little Shanghai—pure industry. In two years, we were making money. Then SIP came about.

Vietnam Singapore Industrial Park (VSIP) started at about the same time [in the 1990s]. The Prime Minister of Vietnam asked then Prime Minister Goh: “Can we do something?”, and we started developing the industrial park. The Vietnamese were good. They relocated all the tenants, and built housing for them on the land I wanted, with proper development. Every relocation had a little house, a place for chickens. I had never seen such a development.

For SIP, Singapore parties asked for 7,000 ha. A big piece of land;

a flat rice field. I was not involved. I was happily working on the WSIP when then Senior Minister Lee Kuan Yew called me. He put up the Urban Redevelopment Authority (URA) plan for Suzhou Township on a table in front of him and said, “What do you think of this project?” I said, “There are only less than 10% of brown patches.” He said, “What do you mean [by] ‘brown patches’?” Brown patches are jobs. If you want to create a 7,000 ha township for 600,000 people, where are the jobs?

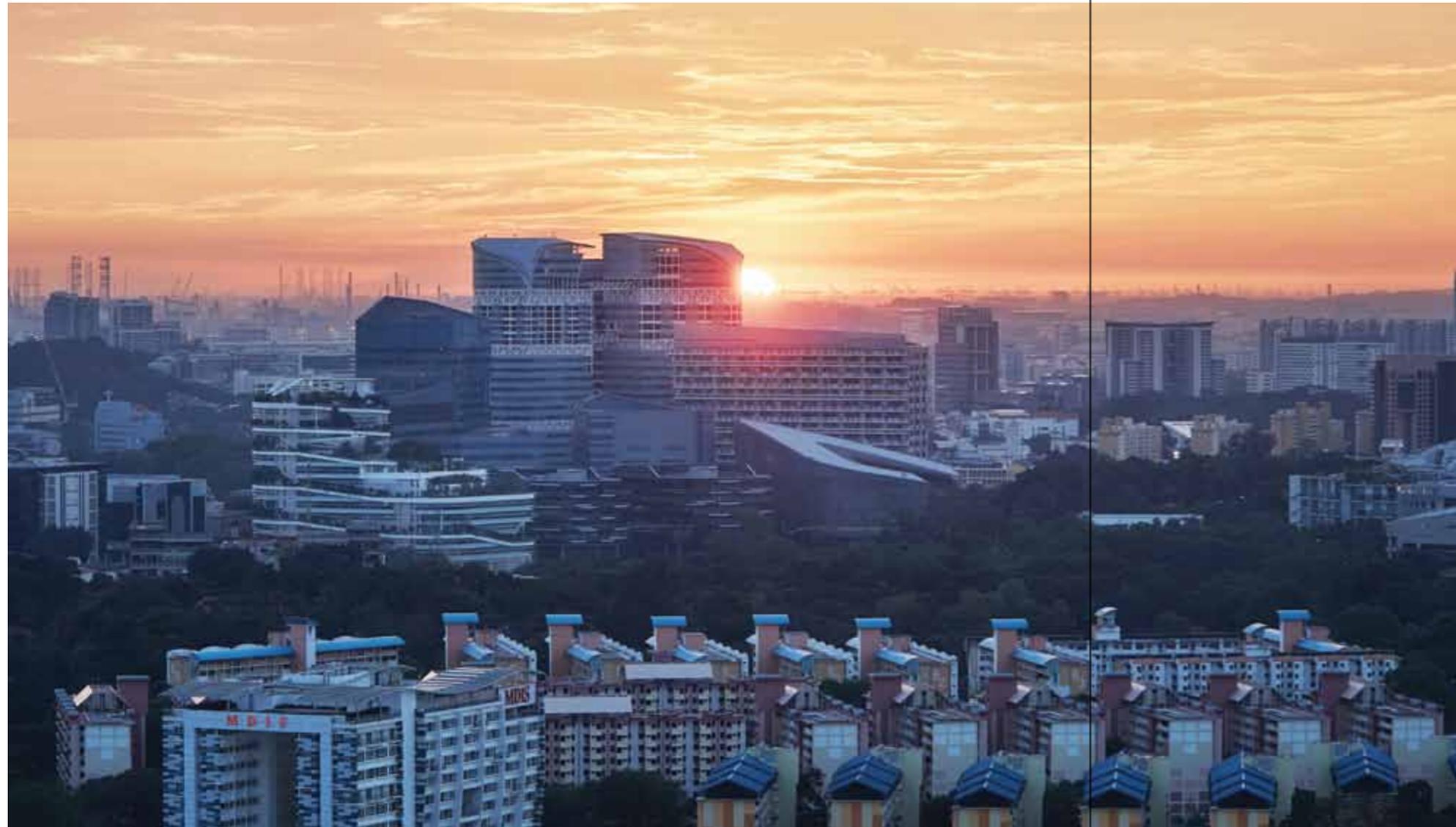
But Singapore parties made a mistake of building infrastructure for all 7,000 ha. We should never build infrastructure ahead [of time]; it should be done in phases.

Senior Minister Lee asked me to take over the troubled project in 1996.

First, we restarted with 1,000 ha, focusing on creating jobs. From jobs, you create home demand, commercial, housing, the rest. I think there are over 400,000 people in Suzhou Industrial Park now.

3 Jurong Island is the only island in the world with a petrochemical hub on it. It has been designed to be as compact and efficient as possible, with underground pipes connecting one facility to the next.

It's not how many people we can take; it's how we design the facilities so that people don't have to run around from building to building. You make it as compact as possible. It's almost like a beehive.



4

BIOPOLIS, FUSIONOPOLIS,  
JURONG ISLAND: KEEP  
EVERYTHING COMPACT

At home, I had an idea in 1990 to create a real science hub.

At Biopolis, we have 3.5 million ft<sup>2</sup> of space for biomedical science laboratories. The housing there has advantages because it's the first housing provided in a scientific research district. You see lots of bridges. Why would I want to walk out in the sun? The key is to have many bridges, but bridges are not cheap.

At Fusionopolis Phase 1, JTC Corporation paid for the Mass Rapid Transit (MRT) station there; it's the first privately-paid for subway station. What is unique about this building is there's a swimming pool on top, meeting rooms downstairs, a subway, apartments, an auditorium for scientific talks, six levels of basements, a supermarket and 600 carpark lots. It's a city, an example where I really intensified the use. Now, we have progressively moved towards more than just creating jobs, to creating places to live and work. With all the facilities, transportation, water, everything, you can have a population that's very compact. Today, Fusionopolis has a total area of 4 million ft<sup>2</sup>.

Jurong Island is the only island in the world with a chemical park. One company manufactures something, then it just gives it to the guy next door through a pipe—no need for vehicular transportation. The whole of Jurong Island, from one company to the next, is all piped. The idea of an efficient city is the same—everything is underground.

It's not how many people we can

take; it's how we design the facilities so that people don't have to run around from building to building. You make it as compact as possible. It's almost like a beehive.

There have been good journal papers written about social networks—it's always about [having] people nearby. When I went to Sweden in winter—all the buildings are connected. You can freeze outside, so all the buildings were made compact. I don't have to go out; it's almost like living in a cocoon. You must design a building in such a way that it's like cluster living. In the Middle East, there are a lot of very compact high-rise buildings—with shops, restaurants, barbers—like little beehives. That's what a smart city could be. ■

PHILIP YEO  
Chairman, Economic Development  
Innovations Singapore  
Former Chairman, SPRING Singapore  
Former Chairman, Economic  
Development Board, Singapore  
Former Chairman, Agency for  
Science, Technology and Research,  
Singapore

4 Fusionopolis (background) is an example of land-use intensification where the compact mixed-use complex contains office and meeting space, a supermarket, apartments, an auditorium, a swimming pool, and an MRT station underground.

# THE CENTURY OF THE CITY



## WHY A CITY'S SIZE AND DENSITY MATTER The Urbanisation

Project—the moving into settled urban areas—is what humans started about 12,000 years ago. It is a project that not only has a beginning, but also an end. We can see the end. The reason I call this lecture ‘The Century of the City’ is that The Urbanisation Project, for better or for worse, will be over by the end of this century. So, it makes this a truly unique time in human history. We should step back and ask: why did we urbanise? What was it about density that was so helpful? Let me give you two indications of the benefits of bringing people together.

First, the scaling law is such that the number of passenger trips on airplanes scales with an exponent of 1.4, relative to the population of a city. What that means is, if you took a thousand cities, each with 10,000 people, and aggregated them into a single city of 10,000,000 people, because passenger loadings scale

more than linearly with population, what you get is 15 times as many flights per person in a city of 10,000,000 than in a city of 10,000.

So, if connectivity to other cities is an important part of our lives and how we do our jobs, bigger cities are going to have inherent advantages—they are places where we can live and get a direct flight to another city.

Scaling laws mean that there are inherent advantages of size still playing out around the world, and there are some interesting strategic dynamics such as first-mover advantages. There will never be another city in western Kansas or Nebraska like Denver because Denver got there first, because it's already a place that is big, with lots of airplane loadings.

Here is another illustration of a scaling law about cities that suggests another side to density. Suppose we increase the size of the city and population by a factor of 1,000. When you do that, you also make the city denser. What you find is that you use

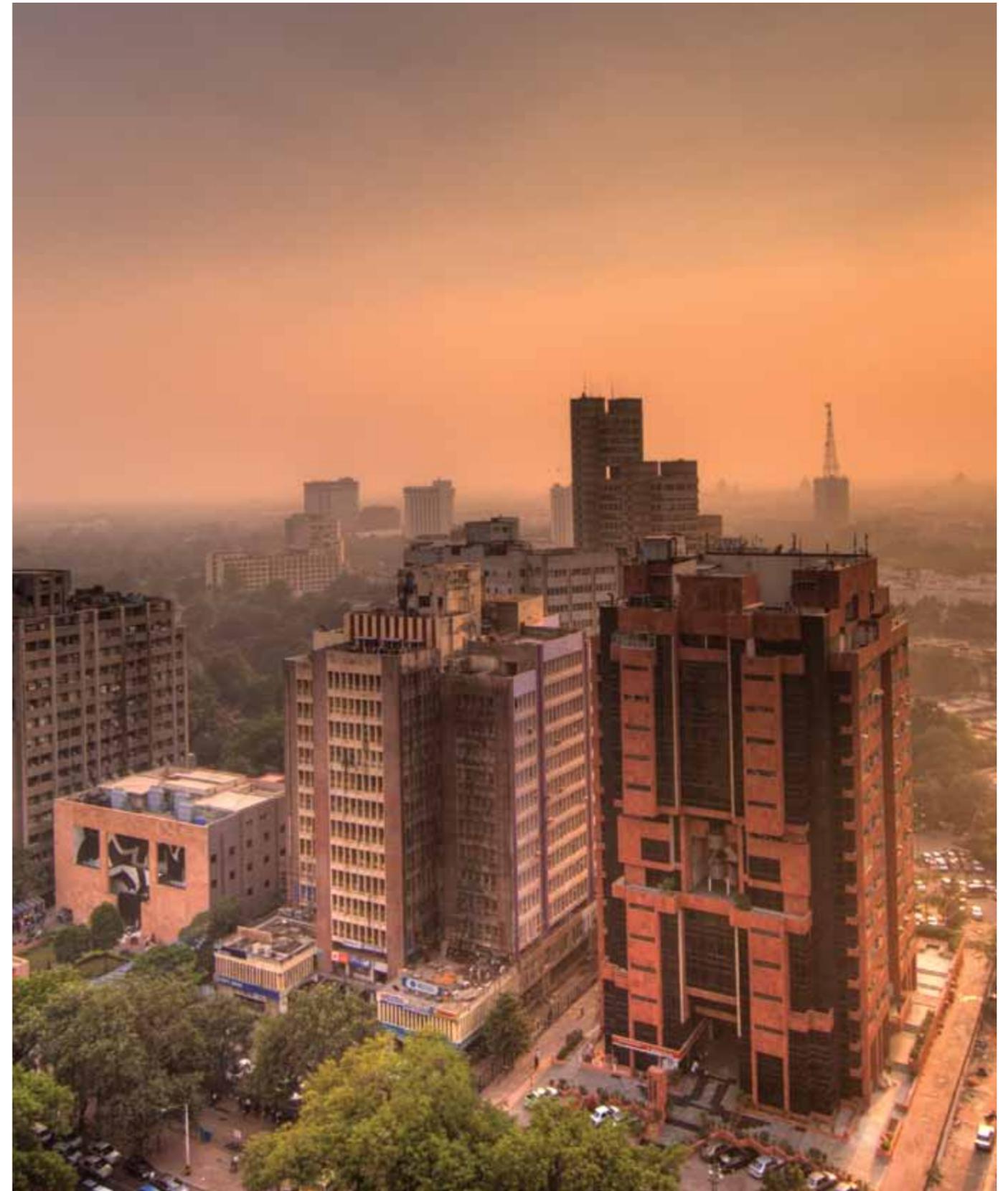
about 60% less copper to wire up everybody in the city because they are more closely packed together. So, larger cities give us connectivity, and they use resources more efficiently. Very dense cities have less carbon per person, so they are very beneficial in many ways. This process of urbanisation is something we should celebrate and be optimistic about.

## HOW CAN CITIES URBANISE MORE EFFICIENTLY?

A question I want to raise is: what does it take to urbanise efficiently, getting the most benefits out of the potential for connectivity and for greener life? We want to think not just about the benefits of cities, but also what is needed to take full advantage of those benefits.

The Urbanisation Project will come to a close in this century. Let me give you a sense of the kind of challenge that this presents us. In 2010, there were about 6.9 billion people on Earth and the urban population was about 3.5 billion. This figure got some

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So, if connectivity to other cities is an important part of our lives and how we do our jobs, bigger cities are going to have inherent advantages—they are places where we can live and get a direct flight to another city.

attention—half the world’s population was in urban areas. But that’s not the most interesting fact.

Because of falling fertility rates, we can be quite certain that the world’s population is going to stabilise at about 10 billion people in this century. And we can guess that, given the benefits of urbanisation, we will achieve urbanisation rates of 70% to 80%. By the end of the century, we will have seven or eight billion people in urban areas. This means we’re halfway through completing The Urbanisation Project. We’re going to complete the second half in one century. We took 12,000 years to do the first half. Urbanisation is going to come much,

2



3



that I can communicate to you. New technologies that drive improvements over time are part of the deep source of benefits from interaction. If I invent one thing and I can share it with 100 people, it has one value. But if I can share it with 1,000 people, it’s got 10 times as much value because the same idea can be shared over and over again.

This has long been a key tenet of macroeconomic thinking, that progress depends on technologies. Technologies and sharing of ideas are one of the deep sources of the benefits of scale, density, urbanisation and connectivity. But you also need rules that structure our interaction. The rules of social organisation in one of those mobile communities for a foraging band are just totally different from the rules that structure social interaction in an urban setting.

much faster—two orders of magnitude faster, and so, doing it efficiently may become more challenging.

Once we’re done with The Urbanisation Project, the system of cities that we have built will exist around the world forever. It will determine the human geography of a planet forever.

You might have a few relatively small cities that shrink as bigger ones exploit their advantages of size. You won’t find any new big cities, and by the end of the century, this will be true of the world as a whole. So, the challenge is to set the worldwide system of cities that we’ll live with as a species forever.

What is the opportunity implicit in this challenge? One reason we interact with each other is because of the benefits of sharing knowledge. There are enormous gains associated with picking something I know

- 1 The city of New Delhi in India is projected to become the most populous city in the world by the year 2028, according to UN estimates. Its current population of about 29 million is expected to grow to 37 million within a decade, surpassing Tokyo.
- 2 Shoppers congregate at a busy street market in Tehran, Iran. More than half the world’s population currently lives in urban areas. This figure will rise to nearly 70% by 2050, posing challenges to city planners seeking to accommodate this large influx of urban migrants.
- 3 A crowded pedestrian crossing in Central, Hong Kong.

Once we're done with The Urbanisation Project, the system of cities that we have built will exist around the world forever. It will determine the human geography of a planet forever.



4 With a population of nearly 25 million people, Shanghai is China's largest city. The city has a radical plan to cap its population at this level by 2035, in order to address pollution and avoid a shortage of public services.

CITIES NEED TO RESET THEIR NORMS TO BOOST BENEFITS

One of the deepest puzzles in social science is why very inefficient rules can persist. For example, in one city in Africa, students do their homework under streetlights at the airport, because they don't have electricity at home. There is a 100 year old proven technology for generating electric light in people's houses, but somehow there are rules in place that prevent the spread of technologies that could be shared in a way where everybody benefits. Somehow, the whole country is stuck in an equilibrium with rules that prevent those gains from being realised.

We need better rules to keep up with things like new technologies. And we need to understand not just how we would invent better rules, but also how we can propagate the better rules that already exist throughout the world.

Rules can either be laws or norms. For a simple behaviour like jaywalking in a city like New York, there's a law against jaywalking, and there's a norm that says jaywalking is good. So, people jaywalk. In Zurich, there is a law against jaywalking and there's a norm that says jaywalking is bad. When we think about rules, we've also got to think about norms.

One general empirical observation is that it is easier to change norms in a start-up organisation. Start-ups are powerful drivers of innovation partly because you can reset the norms about what's the right and wrong thing to do in a social group, by collecting a new group of people who share some norms. They then reinforce those norms amongst each other, attracting

The opportunity here is that we have a chance to achieve true progress both in a material sense and in having better, more inclusive norms and more equal treatment for everyone, because we have this unique chance to start hundreds of new cities in this century to accommodate the billions of people who want to move into cities.

other people and assimilating them into the norms. For example, in Shenzhen, if you're Deng Xiaoping [Leader of the People's Republic of China from 1978 to 1989] and your challenge is: how do I get people to accept that it's okay for a Chinese worker to work for a "running dog" capitalist? What he did was, instead of saying, "This will be the law of the land throughout China and just live with it, whether you like it or not," he said there are some places where you could try out this kind of arrangement, and if you don't like it, you don't have to go there. Of course, Shenzhen turned out to be a huge success.

The opportunity here is that we have a chance to achieve true progress both in a material sense and in having better, more inclusive norms and more equal treatment for everyone, because we have this unique chance to start hundreds of new cities in this century to accommodate the billions of people who want to move into cities.

The overwhelming challenge the world is facing right now is insufficiency of opportunities for productive investment. How do we

sustain growth and recover from the shocks we've already had. How do we recover if those shocks get worse?

Remarkably, this idea of building entirely new cities could also be the solution to the mid-term macroeconomic problem we face, because those three or four billion more people who want to live in cities are all going to want to take advantage of urban infrastructure. The return on investment in urban infrastructure is obvious, very predictable, and the demand is clearly there. All we have to do is to create an environment where all the places in the world that want to do more saving, and therefore more investment, can bring their resources together with all the people from around the world who want to move to cities, to get the benefits of connectivity and higher density.

**CITIES ARE MORE LIKE START-UP BUSINESSES THAN NATIONS**

Academics organise their thinking using units of analysis—nation-states, businesses and the individual. Now, think of sticking cities in between businesses and the nation-state. Cities

5 As fertility rates continue to fall, the world's population will stabilise at about 10 billion people in this century. Urbanisation rates will be about 70% to 80%—about seven to eight billion people will be living in urban areas.

What will come out of this is a vision of a state that is narrow and strong. We can't think about "big government, small government" anymore. We've got to think about narrow government but strong.

are a lot closer to businesses than to nations. Some new start-up businesses succeed spectacularly, some go into decline, but nobody would conclude that we should never do any start-ups. In the same way, we should be thinking about hundreds of start-up cities—some may not be viable, but the ones that succeed will create so much value compared to the costs for the ones that don't make it, that we'll be way ahead.

Geography matters. Some locations would be a lot tougher to build a successful city in. The key to a city right now is that it connects to other cities, so where you are in the world matters. For example, Honduras has a coastal location, so there's opportunity for a port. But beyond the potential for connectivity, a city is a place for a lot of people to go because a lot of other people go there. And that's really all you need to make one of these survive.

5



One analogy is, a city's like a building. We just have to have architects plan where every door is and how big every hallway is—that's one extreme. The other would be like the pure economists' extreme, which says that once you've a legal system, just turn it loose, let anything happen. Neither of those extremes is going to lead to a good city. What we've learnt from experience is that there are a few things like the road network, the right of way, that have to be planned from the beginning.

With those in place, to a very significant degree, you can just turn the private sector loose, and it will do things like what people did in Greenwich Village in New York City where I lived. Nobody expected that buildings that had tenement sweatshops for a while now have start-up software firms and a university sharing the same building.

What will come out of this is a vision of a state that is narrow and strong. We can't think about "big government, small government" anymore. We've got to think about narrow government but strong.

A key part of the success in Singapore has been a willingness to experiment, and then to revise based on what you find. So, the real challenge is planning in a way that builds in flexibility. ■

**PROF PAUL ROMER**

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Former Chief Economist, World Bank

# Conserving Heritage in Hong Kong: A Paradigm Shift



## EMBRACING THE PEOPLE'S PASSION FOR HERITAGE

In my years as Secretary for Development, I visited Singapore on average once every year to learn and be inspired by what the government has done to make this a very successful and vibrant city. As a good student, I thought I should come back here to present my interim report card on what I have done with the things I have learned from Singapore. Unlike Singapore, we in Hong Kong came to realise the importance of preserving a city's history, heritage and intangible culture only very recently. Hong Kong is very famous for her rapidly changing cityscape, with old buildings giving way to skyscrapers because of intense population pressure and growth over the years. In Hong Kong, we have 1,100 km<sup>2</sup> of land compared to your 700 or so. But we are very constrained in land use because of our topography and our

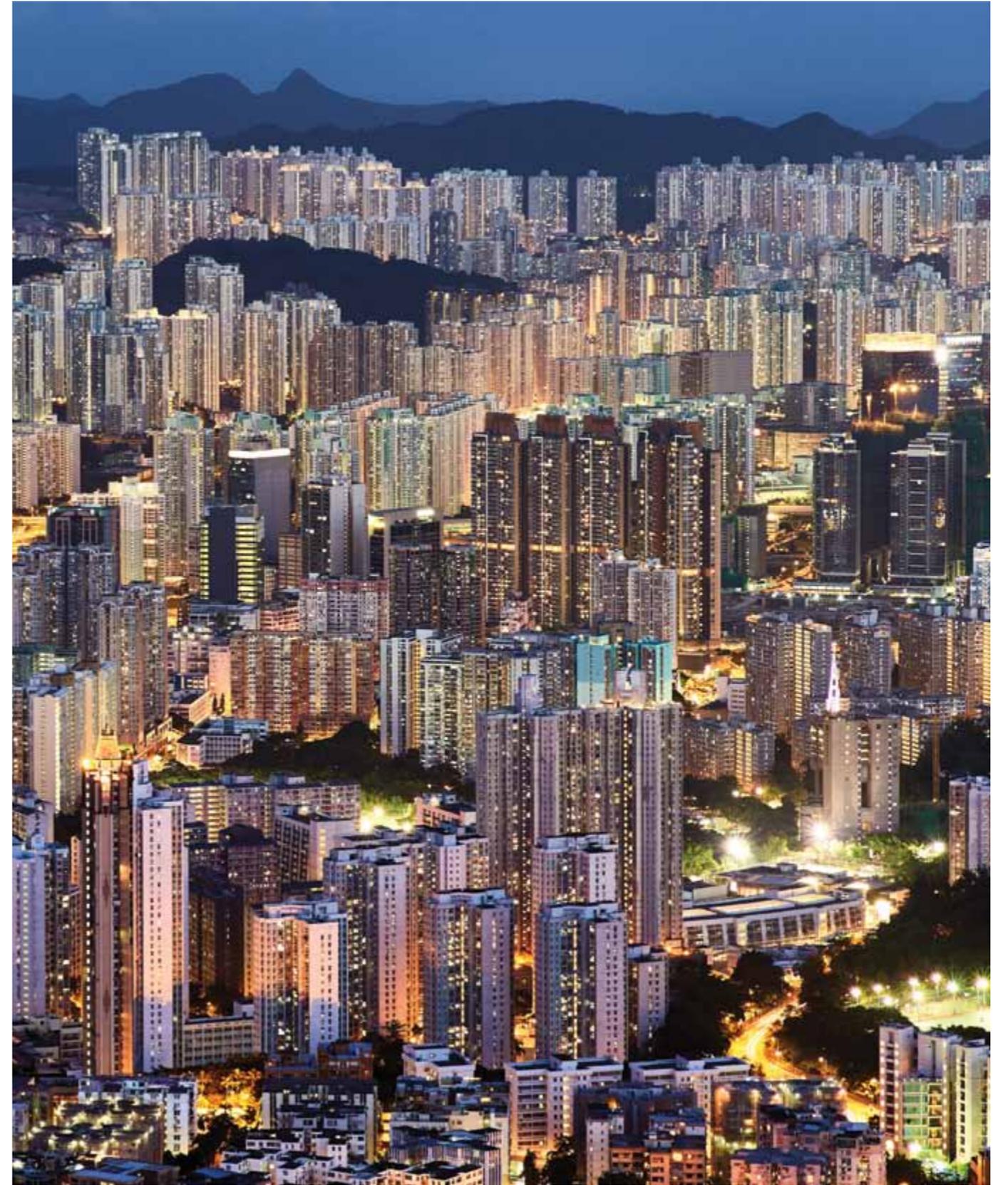
policy, adopted many years ago, to preserve as much of the countryside as possible. Hence, we have chosen a very concentrated, high-density mode of development. Some 46% of land is protected by statute, which the public guards very vigilantly; they will not allow the government to tap into the countryside to provide land. Developed land accounts for only 23%, so, with a population of seven million, we're crammed into 260 km<sup>2</sup>, giving a density of 27,000 inhabitants per km<sup>2</sup>.

In recent years, the Hong Kong people have expressed passion for our culture and lifestyle, with protests ranging from protecting the Victoria Harbour to historic features like private mansions and the Queen's Pier. As a city, we really need to consider the public's reaction, including that of the younger generation, and try to respond positively. As Secretary for Development, I have to strike a

balance in a very delicate and sensitive way, if we are to continue to take our infrastructure forward. Our paradigm shift is that we do not oppose the passion for heritage conservation; instead, we embrace it and try to find a way forward.

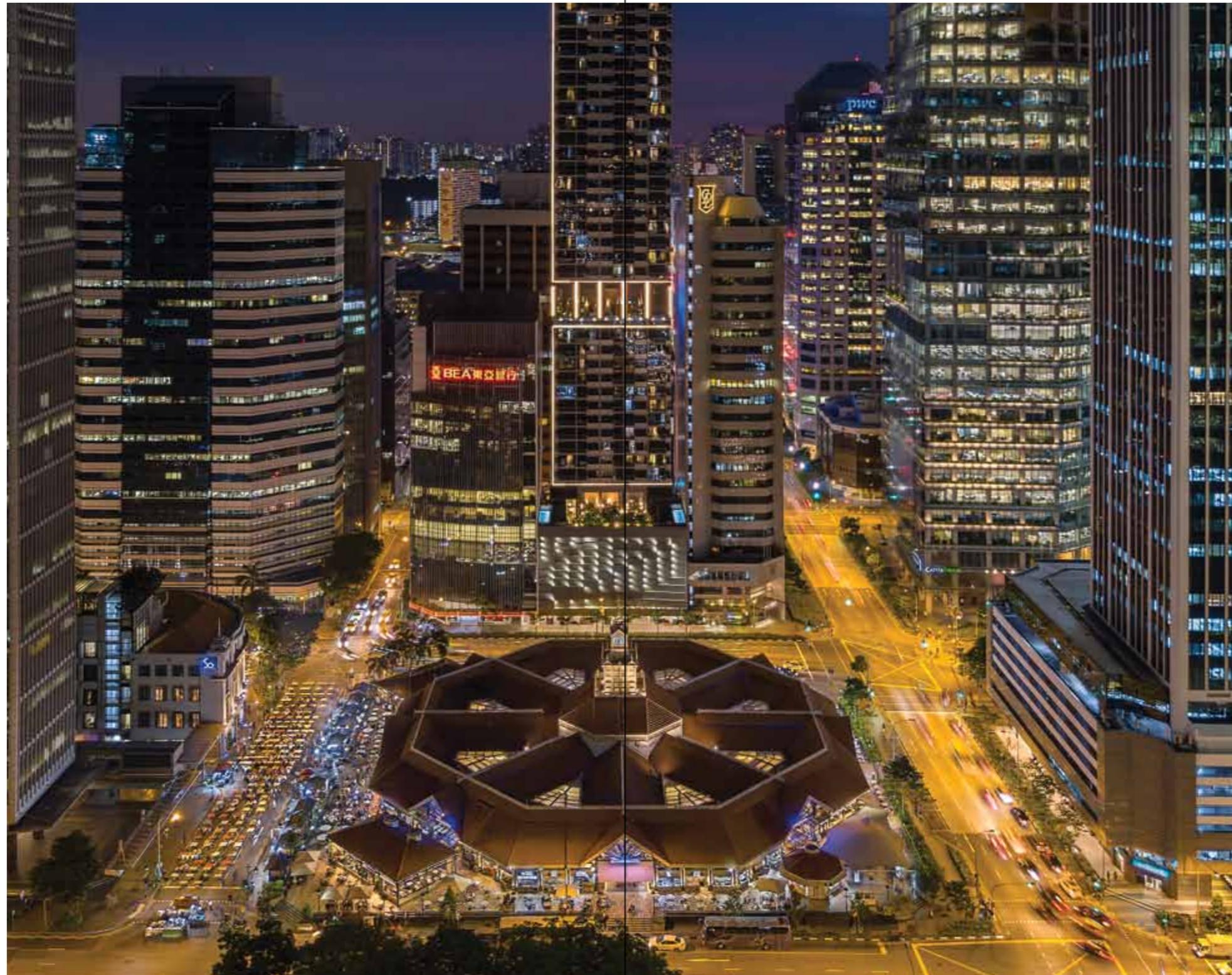
Let me share some key events in Hong Kong's heritage conservation in the last five years. In 2007, the new owner of a historic mansion called King Yin Lei [built in the 1930s] wanted to demolish the building. But he knew that for formal demolition, he would have required a Buildings Authority permit. Instead of exposing his plan, he chose to deface the building, tearing down tiles and sculptures. The incident was reported by the media, and within a couple of days, I used my legal powers to declare the whole site a proposed monument. The Antiquities Authority can make such a declaration for up to 12 months. We started negotiations

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with the owner, and came up with a solution to do a land swap. In any normal situation, if the government were to sell a green belt site via rezoning for revenue, the community would have opposed us. But this case went through the town planning board without much objection because people realised that the purpose was to save a historic mansion, which was far more valuable. The Former Hollywood Road Police Married Quarters, which was supposed to be put up for sale as a high-density residential site, was revitalised into a creative industry landmark to create synergy with the arts and antiques galleries in the area. The buildings are pretty contemporary, built in the 1950s, but its historical significance lies in being the original site of the Central School, which was Hong Kong's first

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1 Hong Kong has about 1,100 km<sup>2</sup> of land, but has a policy to preserve as much of the countryside as possible. Developed land accounts for only 23% of total land area, resulting in a population of 7 million living in an area of 260 km<sup>2</sup>, a density of 27,000 inhabitants per km<sup>2</sup>.

2 Hong Kong's Chief Executive Carrie Lam brought up Singapore's conservation of the historic Lau Pa Sat market in the financial district as an example of successful heritage conservation.

government secondary school. It is also the school that Dr Sun Yat Sen attended when he was in Hong Kong, though at a different location.

The Central Market, a 1930s building in the heart of Central, was supposed to be redeveloped, but was again pulled out from sale. If it had become a 45-storey office building, not only would we lose a piece of history, the entire area would be suffocated and have poor air ventilation. Instead, it will become a hangout area for workers and also for visitors. The inspiration for this came from Singapore. In 2008, I was driven around Singapore's financial district and I looked at the Lau Pa Sat market stalls there. If Singapore could spare this site from sale and turn it into cooked food stalls, Hong Kong should be able to do the same.

In the same period, we realised that perhaps conserving individual buildings is not good enough. We discovered that the Central District, Hong Kong's CBD, actually still had quite a number of interesting historic buildings. We identified a total of eight projects—seven of them were historic buildings such as the Central Market and the Former Police Married Quarters on Hollywood Road. The last one was the Central Harbourfront, a natural heritage. We pulled these eight projects together and did a little bit of what we call area-based conservation.

In such projects, we put a lot of emphasis on transparency and establishing a level playing field; we did not just hand over historic buildings to one agency. We run exercises to invite proposals and look at designs before we decide to partner with any particular agency.

Our paradigm shift is that we do not oppose the passion for heritage conservation; instead, we embrace it and try to find a way forward.

SIX KEY FACTORS OF HERITAGE CONSERVATION

Drawing from Hong Kong's experience, I see a few key factors of heritage conservation that are common to Singapore:

(1) A MANDATE TO PROCEED

First, it would not have been possible to do anything without a leader's mandate. Then Chief Executive Donald Tsang recognised that cultural life was a key component of a quality city life. He promised to accord higher priority to heritage preservation work in his 2007 election manifesto while maintaining Hong Kong's

development as an international global financial centre, and also the impetus of infrastructural development. In his later speeches, he said that Hong Kong had done something right by deciding on not-for-profit use for some valuable urban projects, which benefited local districts.

(2) THE RIGHT IMPLEMENTATION TOOLS

The second factor is to have the right tools. The first set of tools is the right institution or institutional arrangements. The Development Bureau is not only the planning and



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3 The Former Police Married Quarters on Hollywood Road is a Grade III listed building that used to house married junior policemen. It was revitalised and opened in 2014 as an arts and design venue with a mission to nurture local designers.

4 The Former Police Married Quarters used to be an elite college before it was repurposed in 1951. Former Hong Kong Chief Executives C.Y. Leung and Donald Tsang have lived there. It closed in 2000.

4

lands arm (which includes urban renewal) but also the works arm in architectural services, drainage, water supplies and so on; we also have the heritage portfolio. This set-up is very conducive to facilitating heritage conservation. Often, what will undermine heritage is development, including infrastructure. Nowadays, since I am both infrastructure secretary and heritage secretary, we say at the very beginning of planning or conceiving a piece of infrastructure that we'd better be very careful about whether we're going to touch any historic buildings. The second tool is compensation. Compensating private owners with cash will not take you very far, because taxpayers do not like to spend billions to preserve old

buildings. So, to have the planning and lands, and urban renewal arms within the same heritage authority means that I have the mandate to offer economic incentives in the form of planning control relaxations or land exchange, in order to save a historic building. The third tool is to have people who are very sympathetic to old buildings. I created a dedicated office to preserve built heritage, the Commissioner for Heritage's Office, to be the focal point and to spearhead our various conservation initiatives. We also facilitate heritage preservation by having a building authority that is more sympathetic, such as regarding the building code, to make it easier for developers to support preservation work.

Heritage will gradually have a spill over effect and draw more support from people.



**(3) CLEAR POLICY AND WORKING FRAMEWORK**

The third factor is to have a very clear policy, as well as an effective legislative and administrative framework in place. Our policy statement embraced some key elements—we want to protect, conserve and revitalise, as appropriate, historical and heritage sites and buildings through relevant and sustainable approaches. This is for the benefit and enjoyment of present and future generations, because we realised that historic buildings are not homogeneous. Some historic buildings can be given a new lease of life, turned

into hotels, while others perhaps have to be protected like an antique—you do not touch it but just ensure they are properly maintained. In implementing this policy, we give due regard to a few aspects—first, public interest such as respect for private property rights because if Hong Kong loses this, it will lose half its advantages and attractiveness to foreign investors; second, paying attention to budget considerations because you cannot simply look to the Treasury to buy out historic buildings; third, cross-sector collaboration and active engagement of stakeholders and the public.

5 The existing Central Market in Hong Kong is a Bauhaus structure that dates back to 1939. It was at that time the largest meat market in Southeast Asia. It is listed as a Grade III historic building.

**(4) FUNDING SUPPORT**

The fourth factor is very important—money. For the revitalisation of government-owned historic buildings allocated to non-profit organisations, for example, while we provide the necessary funding to refurbish the buildings up to modern day standards, we expect them to be self-financing in the long run. They should generate revenue as a social enterprise to sustain operations, for example as a school, hotel, restaurant or hostel. But initially, if they are running deficits, we will help them with funding of up to HK\$5 million per project. We also provide advisory services. Without funding support on both hardware and software, most projects simply would not have happened.

**(5) RESPECT FOR PROPERTY RIGHTS**

The fifth factor is respect for private property rights. We cannot just take over properties and assets. We give economic incentives to the owner—that is, if they do it our way, we would support a relaxation of planning and/or land restrictions. We try to work with the characteristics of each site. In one project in the Pok Fu Lam area, we gave the developer exceptional approval to build, to get over government restrictions on building in the area because of traffic congestion. In other cases, minor relaxations of building height and plot ratio help accommodate new buildings while retaining some old parts.

**(6) COMMUNITY PARTICIPATION**

The sixth factor is community participation—our guiding principle from day one. We involve the community in various ways, such as

the Antiquities Advisory Board, and we work with academia. We also set up heritage trails for public enjoyment.

Heritage will gradually have a spill over effect and draw more support from people.

Although a latecomer to heritage conservation, Hong Kong has many buildings that have won the UNESCO Asia Pacific Heritage Awards. But more work needs to be done. We need to garner greater support and appreciation from private owners so we need not have tough negotiations every time. There can be win-win situations with voluntary efforts by private owners. ■

**CARRIE LAM**

Chief Executive, Hong Kong  
Special Administrative Region  
Former Secretary for Development,  
Hong Kong

# Grand Plans for a Growing London

“It is easier to persuade people using such plans as they can see a larger plan and imagine the outcomes. It also helps residents psychologically to know they are not the only ones facing a trade-off.”



Greater London has a bold plan—to become the “greatest city in the world”. London is not competing with other major cities in Europe, said Sir Edward, but with cities like New York, Hong Kong and Singapore. Sharing the city’s strategies and challenges, he made a distinction between its strategic plan (a “very heavy” legal document that goes through public inquiry and is consulted in detail) and its infrastructure plan, “a much lighter document” that can be changed quickly if needed. He listed “four big questions” for infrastructure planning. First, what infrastructure will we need? Second, where will it go? Third, how will we deliver it? Fourth, how will we pay for it?

For him, transport determines all other parts of the infrastructure. “It opens up the city, opens up the land use,” he said. “It is a driver of prosperity, of change.” From his experience, presenting a comprehensive plan is more effective than discussing separate single plans. For example, not just building one bridge at any one time but a few bridges, a tunnel and

crossings to relieve traffic congestion all at once.

It is easier to persuade people using such plans as they can see a larger plan and imagine the outcomes. It also helps residents psychologically to know that they are not the only ones facing a trade-off.

Investors consistently mention parks, open spaces, restaurants, museums, theatres and other cultural offerings among London’s attractions. Hence, the Greater London Authority supplements existing greenery by ensuring that developers enhance these “public realms” on their properties. “It isn’t just a nice-to-have, it’s actually an essential ingredient,” said Sir Edward. London’s ambition is to have complete sustainability within the city, for example, by processing its own rubbish and recycling all waste. By promoting green industries, the city encourages developers to come in with new projects. ■

SIR EDWARD LISTER  
Chairman, Homes England  
Former Chief of Staff and Deputy Mayor  
for Planning, Greater London Authority

# How Three Cities of Colombia Were Transformed

Security and political and economic stability are key to the cities’ positive outlook.



Bogotá, Medellín and Cali—Colombia’s three most populous cities, contributing 36% towards the national GDP—experienced profound changes during the last two decades. The national unemployment rate dropped from 17% in 1994 to 9.9% in 2015 (8.7% for Bogotá, 11.3% for Medellín and 12.4% for Cali). The homicide rate improved from the previous high of 486 (per 100,000 persons) in Medellín and 218 in Cali during the 1990s, down to a national average of 28 in 2014.

Castro-Gomez outlined the positive changes that shaped these cities. Citizen participation increased, drawing further investment and innovation. New projects arising from these investments gave cities a benchmark by which to judge the performance of mayors, who are elected every four years, as well as congressmen and members of city councils.

Fiscal performance improved, with Colombia working closely with the World Bank. Budgets are high, with all three cities in a better state of tax

collection. Transport systems have expanded and improved. Medellín was named the world’s most innovative city in 2013 by the Urban Land Institute. Its efficient cable car system services the city outskirts, connecting poor rural communities with the city. Old jeeps that zigzagged the mountains were replaced by cable cars. This brought many benefits to remote communities, enabling urban renewal and attracting investments.

Security and political and economic stability are key to the cities’ positive outlook.

Export promotion has become more ambitious. The government helps companies cut red tape—an overhaul in bureaucracy that has been positively received. Every foreign attaché helps promote investments and make the process less daunting, even with no commercial unit attached to its foreign office, such as in Singapore. ■

SANTIAGO CASTRO-GOMEZ  
President, Banker’s Association of Colombia

# Singapore's Public Housing Story



## DARING TO GO AGAINST WORLD TRENDS

I'm going to try to paint the Housing & Development Board (HDB) story from a broader perspective. As HDB's CEO, what I did was to acquire land, resettle, plan, design and manage 23 new towns. At the Urban Redevelopment Authority (URA), I did the 1991 Concept Plan, updated the Planning Code and consolidated the conservation effort.

In the 1960s and 1970s, we had a large population, a small island and a government committed to providing housing for everyone—we had no choice but to go high-density and high-rise. We made each new town highly self-sufficient, so that people could have their daily needs, including jobs, mostly satisfied within the town.

To have home ownership for all, the first-generation government

thought through what's good for Singaporeans and the country, and chose to go against world trends, which were then against high-rise housing.

When you clarify your ideas, you have the courage to go against world trends. Clarity equals courage.

In Singapore, the land component on total cost of development is very high, therefore the government has to step in. We learned a lot from Hong Kong, a pioneer before us, and improved on their experience. If we plan carefully, we can have our cake and eat it. High density and liveability are compatible. High density and high-rise buildings are common among Asian cities, but Singapore's experience proves it is viable.

In 32 years, the colonial housing agency, Singapore Improvement Trust, built 27,000 units. HDB, even currently, builds more than 27,000 units in one year. We were very clear

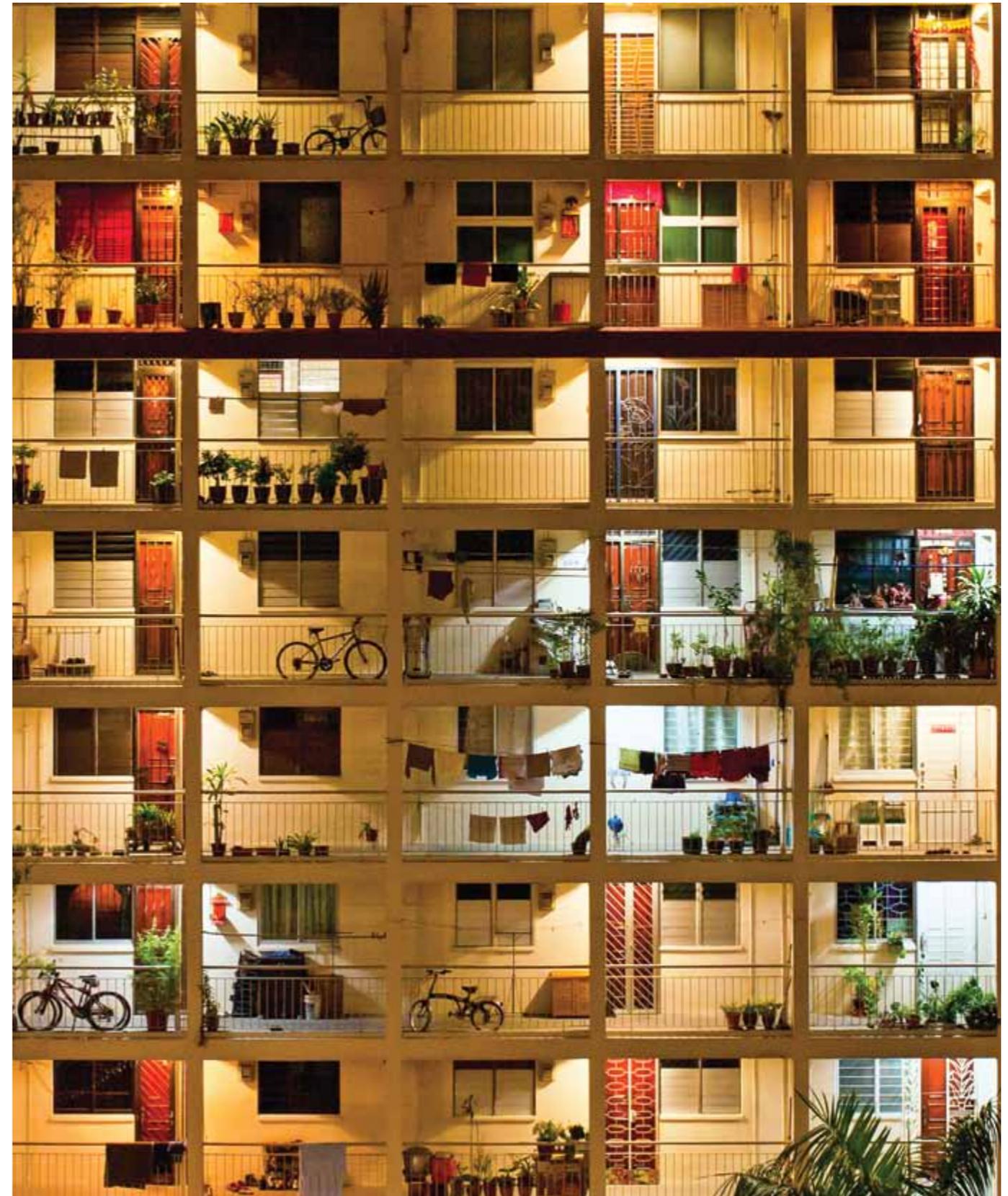
about our goal, and found ways to deliver. By 2012, HDB had built over a million units. We cleared all the squatters by 1985.

## SIX STAGES OF HDB'S DEVELOPMENT

The HDB story has six stages. Stages one and two were part of the initiation. In the first stage, we were trying our best to make things work, to build up resources. In the second stage, we consolidated our ideas and filled in the gaps.

We moved from rental flats to ownership, and the focus was shelter. In those days, improvement started with cross-ventilation, good plumbing, electric lights, and so on. After that, we implemented home ownership with the Central Provident Fund (CPF), and improved our delivery capacity so we could build much more. We also immediately started sociological research. We engaged about a dozen

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When you clarify your ideas, you have the courage to go against world trends. Clarity equals courage.

sociologists with PhDs, to do research and investigations and give our architects, engineers and planners feedback on what makes a good city.

Stages three and four were about refinement. The quality of flats in the first and second stages weren't as good; we used cheaper materials. But in stage three, we changed the materials. Later, with Singaporean's rising income, we looked for excellence in every way, including provision of amenities in new towns.

Before that, public housing was called "low-cost housing" and people felt embarrassed. At HDB, we felt we were under-marketing ourselves, so we renamed it "public housing", with larger flats, more amenities and much bigger building programmes. We progressed to better design and finishes because we could afford to

pay for technology.

We had basically solved the housing shortage problem, so we had the energy to examine whether HDB flats could be an asset to the people. This was the government's decision—why should private properties appreciate in value, and not HDB flats? We upgraded a lot of older flats, and after renovation, property values in those days would go up by, say, \$70,000. This was what the government did to help people feel they owned an appreciating asset.

In stages five and six, we looked to upgrade old estates and reduce the HDB stigma by bringing private housing into new towns. Response to the first site sale was fantastic. My estate officers explained: "With all the facilities we provide, why won't they come?"

1 Singapore chose to go against world trends in the 1960s and 1970s, developing high-rise, high-density public housing to accommodate the country's growing population in the long-term. All squatters were cleared and resettled by 1985, and Singapore's home ownership rate stands at about 90% today.

2 HDB blocks at Bendemeer Road in the 1970s. The low-rise buildings between the two blocks were Bendemeer Shopping Mall. Located behind the block on the right was a wet market and hawker centre. Each HDB town was made highly self-sufficient, so that people could have their daily needs mostly satisfied within the town.

3 MRT rail lines ensure high public transport connectivity between HDB towns, lowering travel times for residents. This also lowers the carbon footprint, and enhances quality of life.

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Everything that happens in Singapore is by design.

HDB AND CPF: ENVY OF MANY COUNTRIES

Without government backing and the foundation laid by the Land Acquisition Act and Resettlement Act, HDB couldn't have done what it did in the last 50 years. We knew we wanted to eliminate homelessness. Most cities' governments have their target groups, but only on paper. When it comes to implementation—for example, allocation of flats—the target groups seem to shift. We stuck to our target group, and that was how the Singapore government maintained the support of Singaporeans.

HDB offers standardised housing, but what we deliver must be value-for-money. We felt we should cut out all

the frills and give people the biggest area that the budget allows. So, we gave the residents freedom to decorate the whole flat by themselves.

We started by building for the lowest-income group who could afford to pay rent. That was how HDB's finances continued to be sustained. Later, we moved to higher-income groups. By then, the lower-income groups were mostly employed and could pay rent. HDB area officers gave employment as cleaners, rubbish collectors, gardeners, and so on, to help them pay the rent in the early days. Of course, we were very strict on eligibility criteria—citizenship, household income, etc.

What was important was that we

kept our rules very simple. For example, unlike most other cities, in the early days we didn't have rules regarding the number of persons per HDB apartment, or in each room. Our priority was to make sure there was no homelessness.

We tailored apartment sizes to affordability. This was a constant exercise of looking at rising incomes and affordability, to use money as much as possible on floor area because, unlike for landed property, even if you had more money you could not increase the floor area of a HDB flat.

Everything that happens in Singapore is by design.

The government pays HDB in a loan, not a grant. HDB spends the money to build new flats, then sells the flats and gives mortgage loans to residents. Residents pay HDB through CPF funds, and the government also gives some grants. Our CPF scheme is a key factor of HDB's success, and is the envy of many countries.

We cannot subsidise residents blindly. The government and HDB must be financially viable. If we were soft-hearted and generous in the beginning, HDB would have gone bankrupt. HDB makes profits from shops, factories, car parks, etc. It is a very simple logic. With income from property tax, corporate tax and

personal income tax from the building industry, that's how we get back the money to continue giving HDB grants.

We could resettle people one community at a time—people who moved into HDB estates were still with their old friends and relatives. We also built schools nearby. The density of 20,000 persons/km<sup>2</sup> was reviewed when I was in URA to see whether Singapore could accommodate the needs of 5.5 million Singaporeans by 2091. If I had instead planned for 2013, we would be in deep trouble now. It's a good thing we planned long term. With this kind of density, we could accommodate every single person and all their needs.

#### BUILDING A COMMUNITY IN EACH HDB BLOCK

HDB, to all of you, is hardware—just blocks of flats, design, architecture. But there's a lot more behind it. We planned new towns with the community spirit in mind. The segmented corridor is the smallest unit of a community. With the help of sociologists, I was told that a person can only have up to seven neighbours; psychologically, they cannot cope with more than that. I went to visit the blocks, and saw this sense of community for myself. This is one way to create a sense of belonging.

The bigger community is the precinct, about 3 ha in area. A survey showed that people could relate to a piece of land around this size—any bigger, and they didn't feel that they belong. For access to basic amenities, a survey we did showed that Singaporeans were willing to walk only up to 350 m, because of the hot and humid weather.

For a new town to be a self-sufficient community, studies showed that you need a threshold population to support all the facilities such as commercial areas, educational and religious institutions, parks and gardens, sports and recreational facilities, polyclinics, police stations, community centres and transportation. The land given to residential use is always less than 50%, because we need

the rest for roads, paths, etc. Reserve sites cater for future needs. Good transportation is vital. This comprehensive inventory of community amenities was a big contribution from HDB to city planning. If a city is like a machine for living, these facilities are the machine parts. As a planner, I benefited a lot from my 20 years with HDB learning these machine parts.

#### TAMING THE "HIGH-RISE, HIGH-DENSITY MONSTER"

How did we tame the high-rise, high-density monster? Many people come to Singapore and say, "Your density is high, but I don't feel it." This didn't happen by luck. It was designed to not feel like that. One reason we became a garden city is that there are green footpaths and a green buffer ring around every new town.

You don't need a lot of land, but you must put in green at every opportunity. If you have a one big circle surrounded by green, you benefit people only around a 500 m periphery. But if you cut it into small pieces, you benefit a 1,800 m periphery. Don't underestimate the contribution of small green areas.

Today, everybody is worried about whether higher density will affect our



4 HDB towns and blocks were planned and designed with the community spirit in mind. Sociologists studied how best to design common corridors so that neighbours would interact with each other and build a sense of community.

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environment. But if we plan intelligently, we can work wonders. When we do master planning, we design the environment on a macro scale—it's shaping the whole area. The government must take the lion's share [of planning work] in the beginning but leave the rest to the people. People say this is undemocratic. But this is the reason for Singapore being what it is today: government involvement is very heavy. The government's job is to create a perfect stage, and the people should act out an exciting drama on that stage.

A lot of people tell me they feel Singapore is bigger than its real size. We consciously created the illusion of low density, of "bigness" and "greenness". Otherwise, Singapore will not be as liveable today.

How did we create low density? By using the chessboard as an inspiration. You have to use high and low zones carefully. I spent a lot of time studying building spaces in relation to height, so as to promote psychological well-being. For big buildings, we must maintain a certain amount of continuity, of tidiness. It was my hope that we plan each precinct as a piece of artwork, not as separate buildings. In a HDB new town, there are high- and low-density areas. You never feel that there's only tall buildings everywhere you go, as you see in many other cities.

HDB new towns contribute to the city like building blocks. Being self-sufficient, they minimise travel needs, lower the carbon footprint, reduce travel time, enhance quality of life, and also create high-density corridors for the Mass Rapid Transit

A lot of people tell me they feel Singapore is bigger than its real size. We consciously created the illusion of low density, of “bigness” and “greenness”. Otherwise, Singapore will not be as liveable today.

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(MRT) to work better. It works like a machine.

Visitors like Singapore because our cityscape is very unique and tidy. Don't underestimate a mundane, non-sexy word like “tidiness”. We have building height control, so, when you drive through Singapore, you see the environment changing. Even in HDB estates, building height varies so it doesn't look very dull, so we have an interesting urban landscape and skyline.

As for HDB architecture, we studied building science to maximise cross-ventilation and minimise

stuffiness inside the flat. Beauty doesn't come from expensive materials or creative shapes. Beauty can come from something that costs nothing, by handling proportion well. We just have to use our cunning to find the best design.

In HDB, 95% of people are satisfied with what we did. “No homeless”, “no squatters”, “no poverty”, “no ethnic enclaves”. I cannot think of any other city that can claim these four simple statements. This is satisfaction.

Is HDB's experience transferable? I always tell foreigners, the HDB

experience is an open secret about our successful urbanisation, because everybody can see it. The same planning principles and methodology can be used everywhere if you know how to adapt it. ■

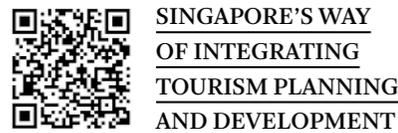
DR LIU THAI KER  
 Founding Chairman,  
 Centre for Liveable Cities  
 Chairman,  
 Morrow Architects & Planners

5 Pang Sua Pond in the HDB town of Bukit Panjang is the country's second-largest man-made floating wetland. Singapore's urban planners ensured that HDB towns had sufficient green spaces—this has created an illusion of low density.

6 Detail of a block of HDB flats in Singapore. Some residents enjoy growing plants and herbs along the common corridor.

7 HDB planners used the chess-board as an inspiration for creating an illusion of low density. New towns were designed to have high and low buildings, and with both high- and low-density areas.

# Tourism's Sizable Indirect Contribution to Singapore's Development



Limin Hee (LH) [Moderator]: I think what's very unique about Singapore is its very integrated approach to planning and development, both for tourism and urban development. Pamela saw very large-scale tourism development strategies that needed the support of various agencies to be integrated within urban development projects. Chin Nam worked very closely with the Economic Development Board (EDB) as well as the arts and cultural sectors in planning tourism development. For Neo Chian, the big-ticket items and events like Formula 1 needed a very integrated approach to achieve their impact. And Lik Peng worked within the nexus of urban development, tourism and enterprise to bring his hotel concepts to fruition.

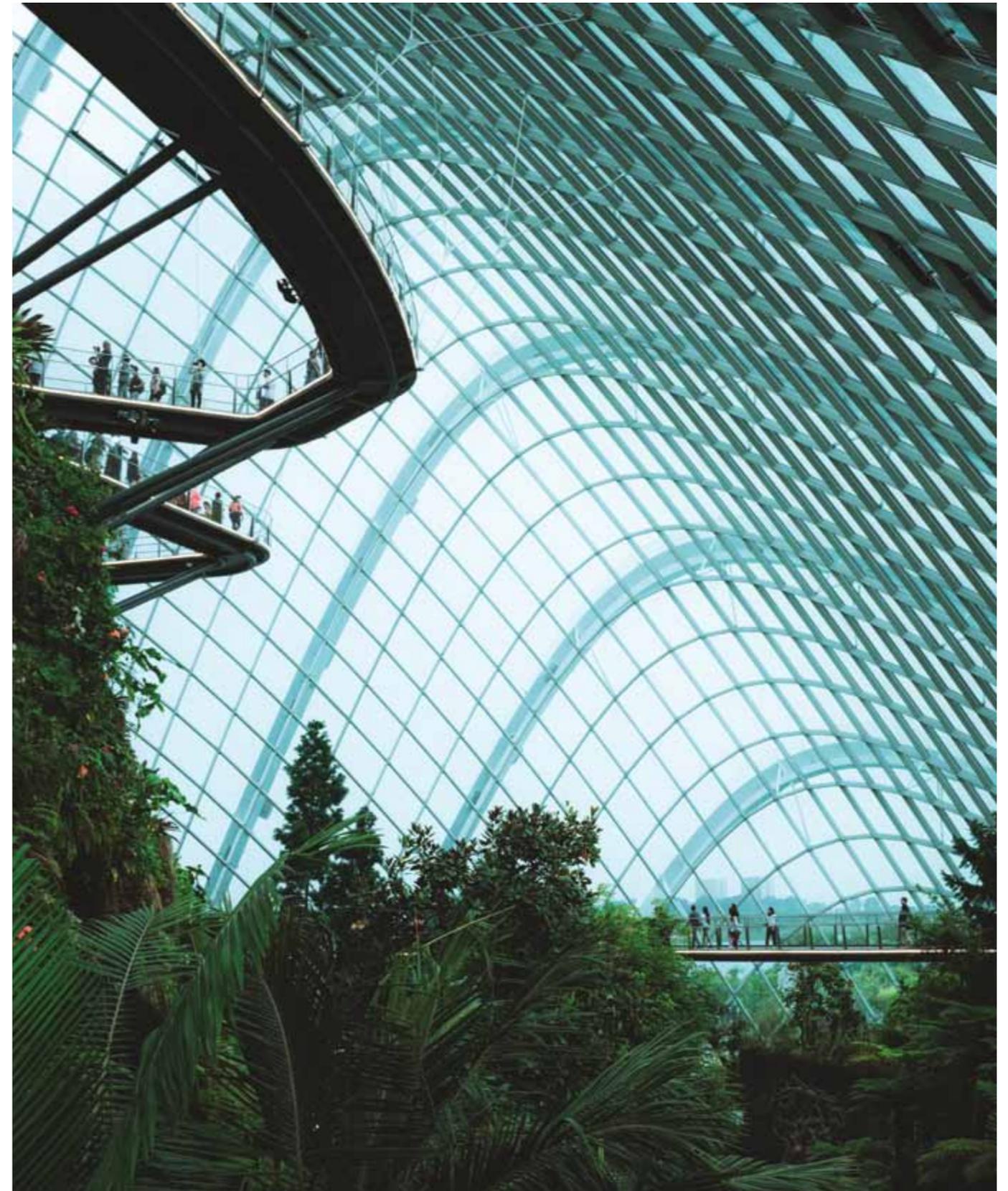
Loh Lik Peng (LLP): I've had the pleasure of working with different tourism authorities overseas, and it always strikes me that countries like Singapore do have a much more integrated approach and are much smarter about how they do tourism. Mainly because Singapore is a small country. If we don't manage these initiatives from a government's point of view, there's very little traction you can get otherwise with fragmented private sector players. In Singapore, the Singapore Tourism Board (STB) is always thinking of new ways to do things. This whole-of-government approach has always been one of Singapore's key success factors.

Tan Chin Nam (TCN): I think this need to have an integrated approach is because of the multi-dimensional nature of the tourism industry. It cuts across all sectors. The GDP

contribution of tourism is about 10%, according to the World Travel and Tourism Council. But the direct contribution is only about 3%. Tourism's indirect contribution is very huge because it cuts across so many different sectors. Therefore it is important to adopt this total systems approach, which is our competitive advantage.

For STB, the approach is always to start with a compelling vision. Then people will be aligned internally and externally. Stakeholders' involvement is absolutely crucial. You need to do a lot of communication to achieve the buy-in. Otherwise, a project like the Integrated Resorts would not be possible. But the spin-off is fantastic. Singapore has been totally transformed in terms of its experiential offering, and property prices have also risen because of this multidimensional approach.

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- 1 Gardens By The Bay is an award-winning waterfront horticultural garden in downtown Singapore. Its 101 ha of parkland features two large conservatories showcasing flora from different habitats around the world. Conceptualised in 2005, the gardens were a key part of the government's "City in a Garden" vision.
- 2 Inaugurated in 2008, the Formula One Singapore Grand Prix takes place each year on the Marina Bay Street Circuit. As the only night race in the Grand Prix calendar, this unique event attracts up to 300,000 attendees from Singapore and around the region.

2

This is also linked to the attractiveness and liveability of the city. In that sense, it's absolutely crucial to adopt a total systems approach.

Lim Neo Chian (LNC): At STB, we like to tell ourselves that we could accomplish a lot more by working with different agencies, compared to trying to do everything on our own. In the case of MICE (Meetings, Incentive Travel, Conventions & Exhibitions), it's very clear that you need to work with the champions of industry clusters in areas including biomedical research, banking and transport. We also worked with the Ministry of National Development on Gardens by the Bay, the Singapore Garden Festival and the World Cities Summit. There's a lot more we can accomplish as a whole government, rather than STB on its own.

Pamelia Lee (PL): I credit two men for this new integrated approach to getting the job done. Mr Ngiam Tong Dow, Permanent Secretary of Finance and Trade and Industry, asked me what I needed. I replied, "I can give you a long list!" This ended up as the S\$1 billion Tourism Development Plan, which led to the conservation of all the historic areas—The Civic District, Chinatown, Little India, Kampong Glam, Bugis Street, Singapore River, Raffles Hotel.

Mr Ngiam was very clever; he chaired all the meetings himself. As he was so senior, everyone had to match his stature by sending very senior people to our meetings—people able to make a decision and change existing policy. Right away, big decisions could be made, old rules

Singapore has done very well in being a very connected city. If you speak to any chefs overseas, they admire Singapore's food scene a lot. They're very aware of what's happening in our very sophisticated offerings. We have a lot to be proud of in that kind of globalisation.

could be adapted to suit new needs.

The other person I credit is Mr Lim Chin Beng, then Chairman of the Tourist Promotion Board. After the tourism plan was approved, he said to me: "What do you need for conservation? You should lead a government delegation overseas to study conservation." So, we invited the fire department, building control, all the people who had to change their codes and regulations to enable the conservation of buildings and whole historic districts.

HOW SINGAPORE LEARNS FROM OTHER COUNTRIES

LH: Singapore learnt a lot from other countries. We went to many cities to look at placemaking experiences and brought in many international experts such as Didier Repellin to help with conservation, and Louis Clair to work on our lighting master plan. Chin Nam test-bedded many new tourism products, engaging world-class retailers and convention experts. Neo Chian brought in world-class players through the Integrated Resorts and F1.

Lik Peng spent a lot of time in the UK, developed hospitality projects in Europe, and brought in many Michelin Star chefs. To what extent do we learn from others but at the same time develop a unique tourism industry in Singapore?

PL: Other governments responded quickly, especially the French Government. They asked us what we needed. I said, "We need French expertise, but can we choose the consultant you send?" We searched, and learned of a young expert by the name of D. Repellin. He came and gave us sound advice, but now, looking back, Singapore was not ready for high quality French standards of conservation, where less intervention is "valued more".

TCN: It's extremely important for Singapore, as a learning nation, to adopt a learning strategy. For Sentosa Cove, Pamela was the first to go to Port Grimaud, France, to look at how to bring about a waterfront living environment. Today, at Sentosa Cove, the environment is extremely conducive. That kind of learning continues in many things we do, such as the new interpretation of fusing modernity and heritage with al fresco dining at places like Boat Quay and Clarke Quay.

LLP: Singapore has done very well in being a very connected city. If you speak to any chefs overseas, they admire Singapore's food scene a lot. They're very aware of what's happening in our very sophisticated offerings. We have a lot to be proud of in that kind of globalisation.

3 Many parts of Chinatown in Singapore have been conserved for their heritage significance, including these shophouses along Pagoda Street.

TCN: Learning should be bi-directional. The whole idea behind the World Gourmet Summit was to bring world chefs to Singapore, to work with local chefs so there will be a lot of fusion, of exchange. For example, British celebrity chef Gordon Ramsay coming to learn how to cook chilli crab. This is the whole idea of fusion, New Asia cuisine and so on.

LH: This is also your idea of bringing Singapore to the world because if you go to many cities in the world now, you can find Singapore food, so it's a very good exchange.

CLOSE COLLABORATION BETWEEN PUBLIC AND PRIVATE SECTORS

LH: Pamela worked very closely with the private sector on projects such as Raffles Hotel, Fort Canning and the conservation districts. Chin Nam worked very closely with private enterprises to build Singapore into a global convention centre and in placemaking efforts such as at Chinatown and Chijmes. Neo Chian's ideas for developing iconic places, using events and strategies to create buzz for Singapore, required not just working with business, but also engaging Singaporeans. Lik Peng worked closely with the public sector on projects in conservation districts.



3

LNC: STB's role is to make sure we work hand-in-hand with the private sector to help them do their job. There are many areas where the private sector will look to the government for support, especially when dealing with red tape, for financial support, as well as in marketing Singapore.

TCN: Co-creation of a vision is important. But when it comes to implementation, collaboration can happen at two levels—government agencies helping individual companies to grow and respond to all sorts of initiatives, and through mechanisms such as a tourism consultative council or national marketing council. When it comes to thematic development, like developing Chinatown or Singapore Riverwalk, you do need to involve stakeholders through a mechanism like a stakeholder association.



4 Shophouses in the downtown Tanjong Pagar district have been conserved, and the area is today a vibrant destination with numerous dining and entertainment options.

HOW TOURISM HELPED TO BUILD A LIVEABLE CITY

LH: Tourism visions and plans not only built up the tourism sector, they also helped build a liveable city. Pamela's involvement in conservation districts and the adaptive reuse of old landmark buildings helped create a city that retains a sense of its past. Chin Nam's idea of infusing tourism development with the development of the arts and culture was a way of investing in people and talents, a very important aspect of building a liveable city. Neo Chian's initiatives created a lot of vibrant precincts, iconic events and new lifestyle options. Lik Peng brought heritage upfront to people who enjoy food.

LLP: Tourist spending has expanded the pie for Singaporeans with the great variety of restaurants, shops and businesses.

It's not just about jobs. We have to look at tourism as multidimensional. It helps a country grow and produces a lot of facilities that have knock-on benefits for Singaporeans too.

LNC: Tourism really is a catalyst for developing many things we would want to do anyway. It provides a context, resources and also the mechanism to help bring about big projects like the Integrated Resorts and F1. About 10 years ago, we wanted to see how to rejuvenate Orchard Road. Seeing it from a tourism point of view, it would be great to have a better shopping street. But we were also quite clear that if you improve Orchard Road, all Singaporeans get to enjoy it.

It's not just about jobs. We have to look at tourism as multidimensional. It helps a country grow and produces a lot of facilities that have knock-on benefits for Singaporeans too.

TCN: Under Tourism 21, STB was already working with Universal Studios to convince the company to come to Singapore, but the company said we did not have the critical mass. With the Integrated Resorts, however, it became quite possible for Universal Studios to be successful. By means of this integrated approach, we are effectively increasing the choices for Singaporeans, enhancing the quality of life and making the city a lot more liveable.

PL: To save Chinatown, I had to convince those who doubted the value of Chinatown. I had to show numbers and write-ups by the international media. I said, "Tourists feel that Chinatown is authentic, not a manmade tourist attraction." I used tourism as the excuse, but I really saved Chinatown for Singaporeans and future generations.

LNC: I have an idea that is quite consistent with how tourists are looking for more authentic experiences, to also learn what

Singaporean society is all about. How do we do this in Singapore? I'd like to suggest: Why can't we have hotels in our regional centres and HDB estates, in Toa Payoh Central or Ang Mo Kio? Tourists could enjoy all the wonderful food we have there. Hotels situated next to an MRT station would allow tourists to easily take the train and go downtown. In the heartlands, tourists can interact with locals. More importantly, Singaporeans, shops, food outlets and all will benefit from the tourists staying there. There are so many places you can think of in Singapore where it is convenient for a tourist. It also brings the benefits of tourism into our heartlands. This is something URA can do.

My other suggestion is that homestays are a very attractive proposition. When I go overseas, I always go for bed-and-breakfasts, which my wife and I love, because getting to stay with a family gives you an entirely different experience. Some of my trips I remember for a long, long time because of the interactions with the owner of the house.

The next step would be to allow this for HDB flats. Given our large number of HDB flats, you might get a certain reasonable capacity to be able to take in quite a number of tourists. It would be a very good experience for tourists. ■

PAMELIA LEE  
Senior Tourism Consultant

LIM NEO CHIAN  
Chairman, Agri-food & Veterinary Authority, Singapore  
Former Deputy Chairman and Chief Executive, Singapore Tourism Board

LOH LIK PENG  
Hotelier and restaurateur

DR TAN CHIN NAM  
Senior Corporate Adviser in various companies  
Former Permanent Secretary, Ministry of Information, Communications and the Arts, Singapore

DR LIMIN HEE [MODERATOR]  
Director of Research, Centre for Liveable Cities



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5 Now in its 11th year, the Singapore Night Festival takes place over two weekends every August, transforming the Bras Basah heritage precinct into a pedestrianised zone featuring arts performances from Singapore and around the world.

# A True Sign of a Liveable City: Children and Elderly Using Public Spaces



THE COPENHAGEN  
MODEL: FIRST, BE  
PEOPLE-FRIENDLY

I'll start with a little story. In Vietnam, I met a Mrs Lan from the Danish Embassy, who asked me: "Do you have a baby boom in Copenhagen?" Actually no, I'd never thought about it before, but in Copenhagen, there are many children and they're very visible. Mothers on maternity leave have a pram and go around with it for one year, and that keeps a lot of babies visible on the streets. We have a very people-friendly transport system. Some 30% of families with children have a cargo bicycle to drive children to school, and the children love this kind of transportation because they can sit and see everything instead of being trapped in a car.

Also, every time there's a small narrow street going into a major

street, they always take the sidewalk or the bicycle lane across because pedestrians and cyclists are just as important as any guy in a Mercedes-Benz driving in from a side street. My daughter Laura, who is seven years old, can walk to school on her own because she can walk on the sidewalk safely all the way.

It dawned on me that what Mrs Lan saw was a city where children are very much part of daily life. Then I started to think that maybe having many children visible in the city, or having many old people using ordinary city spaces, is a true sign of a people-friendly, liveable city.

Wherever you go, just see if you can see children and old people on ordinary streets. A people-oriented planning strategy brings you a very long way towards a liveable city. Be good to the people, and you have a much more liveable city.

I graduated as an architect in 1960, trained in the worst days of city planning ever, in the heyday of the modernists. I was told in school that cities are bad and free-standing buildings are good, that streets are bad but grass is good. Never put residents, workplaces, recreation and communication together. I swallowed it all and came rushing out of school to do wonderful new things...and then I married a psychologist.

We young architects and psychologists had many discussions about what was going on in architecture and planning. Did we know enough about people to make these big decisions about how people should live? What information did we have in our education about people's needs, and what people would prefer? How would these structures influence their quality of life? Why were we architects not interested in people?

Wherever you go, just see if you can see children and old people on ordinary streets. A people-oriented planning strategy brings you a very long way towards a liveable city. Be good to the people, and you have a much more liveable city.

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That was a very hard question—it forced me to go back to school, where I spent another 40 years to study how the built form influences life, how life interacts with buildings, to find out about people and life in cities.

I'm still producing books, and it's a great joy for me that these little modest books have been found useful in the development of places like Bangladesh, Vietnam and Iran. Later, we started Gehl Architects, a consultancy where we hoisted this flag: "If you want a liveable, safe, sustainable and healthy city, we can help you." Since then, we have been extremely busy. It's fantastic that there's an enormous interest in liveable, people-friendly cities from one end of the world to the other; from Nuuk, capital of Greenland, to Christchurch, New Zealand.

#### HOW MOTORCARS AND MODERNISM MESSED UP CITIES

Enrique Peñalosa Londoño, the Mayor of Bogotá, Colombia, once observed that it is amazing that we have so little knowledge about what makes a good urban habitat for humans. "We know so much about what makes good habitat for mountain gorillas, Siberian tigers, whales, elephants, but not much about what makes a good urban habitat for homo sapiens in different climates across the world. It is amazing that so little has been studied in this area."

Looking back at 50 years of research and practice in people-oriented city planning, I realised that around 1960, there were two important changes worldwide in the background of planning—the large-scale introduction of modernist ideologists, and the invasion of the motorcar.

The moment cars arrived, we all got obsessed and allowed them to occupy every space in cities. Over the years, we've seen traffic engineers become stronger as a profession. Everything had to do with capacity for more cars and car parking. We've lost our sense of scale. In the old days, all cities were in 5 km/h scale, like Venice where everybody walked. The spaces were small, signs were small, and there were many details. You could see the people. Anything in the city was up close, and you could see the mountains in the distance. Now, gradually, we make everything in 60 km/h scale, where you have big spaces and signs. There are no details, and sensually it's not at all very interesting to walk around.

What happened also was that every city at once got a transport and traffic



1 Today, there is a cycling culture in Copenhagen, where 55% of residents cycle every day. Copenhagen aims to be the best city in the world for cycling, and to be carbon-neutral by 2025.

2 Superkilen, a public park in Copenhagen that opened in 2012.

3



department. As good professionals, they started to count all the cars and had perfect statistics of everything. Cars were well looked after. But all these years, not a single city had a department for pedestrians and public life. Almost no city had any documentation, knowledge or statistics about how people used the city—this has become a very great problem because you always plan for what you know, and if there's a big sector where you know very little about, then it's generally being overlooked.

The other paradigm shift was the introduction of modernism. Modernism was formulated in the 1920s and 1930s, and in many ways is a very radical ideology from the pioneer Swiss-French architect Le Corbusier. His plan for a new Paris was to take everything down and put up high-rise buildings where everybody could live and have a good time. What happened was that we had to expand all cities very rapidly and planners had to get up in aeroplanes and look at the big areas from above. Nobody was asked to look after the “people scale”, down where people were. Instead of making spaces as we did in the old cities, now we make “in-betweens” and hope that people would like them. Generally, they did not like them very much. Also, we got confused about scale, because now we could suddenly make enormous buildings. We had very big companies who needed very big buildings, and we had these fantastic differences in scale.

THE KEY IS TO MAKE GOOD PUBLIC SPACES

Increasingly, we see that “lively” and

We see that whenever we can make—anywhere in the world—good public spaces where people can quietly come together and have a good time, and see and enjoy each other, then we see that these spaces are happily being used.

“liveable” is asked for a lot. We live more and more scattered, in smaller and smaller households. We have more and more leisure time. We have an ageing population. We have more years in our life and we have increasingly organised our lives so we can do everything privatised. But as human beings, there is always a private side and a social side. And the social side is not really comforted by a very privatised living situation.

We see that whenever we can make—anywhere in the world—good public spaces where people can quietly come together and have a good time, and see and enjoy each other, then we see that these spaces are happily being used.

If we are more focused on people, we will have a better human scale where people will feel more comfortable, just as we had in the old

cities—because man is still this tall, his senses are still the same and he’s still a walking animal. So not much has changed, apart from the architecture.

If we have a more people-oriented architecture, we’ll have safer places. And if more people walk and cycle, it is very good for fighting climate change. Now we’ve got a new problem—and the worst place in the world with this is Saudi Arabia—we have city-planning that invites people to sit and not move. A doctor once told me: “You can be very fat, but if you are active, there’s no problem. If you are very slim and inactive, you are in a bad way.” One hour of moderate activity every day, and you will have seven extra years of life expectancy, and a much better life because of much less hospitalisation, medicine and doctors. We as architects and planners can plan cities in such a way that it would

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3 Having children and old people using ordinary city spaces is a true sign of a liveable, people-friendly city.

4 A good cycling system must be integrated with other transport systems. For example, cyclists should be allowed to carry their bicycles onto trains for free.

It’s fantastic that you organise the Lee Kuan Yew World City Prize and World Cities Summit, because it’s a strong way of signaling that there are good cities, and that people around the world are trying to make fine cities.

be a very natural and logical thing for us to move during the course of our day. We have been on the wrong track trying to have everybody sit all the time.

Copenhagen has been at it now for 50 years. In 1962, they pushed back the cars from the main street. It was very radical. Everybody thought that the mayor was crazy and that it would never work. But now, all squares are cleared of parked cars and turned over to people and activities. This was pioneered in Copenhagen, and is now applied all over the world. All streets have been converted from four lanes to two lanes; never one-way, always two-way. There’s a policy of inviting people to cycle. There is a good bicycle system in all major streets, with a kerb on either side. You can transport everything all over the city; you don’t need a car.

To have a good bicycle system, it must be integrated with other systems so it becomes a real system. All taxis can take two bicycles. On the trains, we can take our bicycles for free. That’s very practical. Over the years,

with all these improvements, a bicycle culture developed. It’s a lifestyle to cycle—for businessmen, pregnant mothers, children and even the Crown Prince. 55% of people in Copenhagen are on their bikes every day. Copenhagen has a policy to be the best city in the world for cycling, and to be carbon-neutral by 2025.

Do we have problems in Copenhagen? Yes, we have really awful congestion on bicycle lanes...So, we doubled all the bicycle lanes, took another lane from cars because a bicycle lane can transport five times more people than a car lane. Also, trains have been forced to double capacity for transporting bicycles.

SEEING THAT IT CAN BE DONE CHANGES MINDSETS

It’s one long story of changing mindsets. In every single city I’ve ever worked in, it always started with some people coming over and saying, “You must realise that this particular place is very different. We have another culture here. We are not Danes, we

are Italians,” or “We are Italians, not Danes,” or “Now you are in the Big Apple, and you cannot ever realise some of the European ways of having urbanity here in the Big Apple.” Then they do it anyway and it’s a fantastic success, and the mindset starts to change.

I’ve seen so many mindsets being changed, and there are so many good examples now around the world. People travel and they hear and see. To me, it’s amazing that [pioneering urban studies professor and activist] Jane Jacobs’s old ideas have been transported so quickly from one culture to the next in recent years.

They’re very sound ideas about making a good urban habitat for homo sapiens. It’s a very simple story, which people can understand right away, but they have to see it and see that other cities have done it. I’m very optimistic.

I think Singapore is well on its way to some of these mindset changes that will bring about a more liveable and happy city.

It’s fantastic that you organise the Lee Kuan Yew World City Prize and World Cities Summit, because it’s a strong way of signaling that there are good cities, and that people around the world are trying to make fine cities.

We can be inspired by this. ■

PROF JAN GEHL  
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Royal Danish Academy of Fine Arts  
Founder & Senior Advisor,  
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# AUCKLAND ON THE WORLD STAGE

To turn Auckland into a destination, the city adopted a design-led approach that focuses on people. It uses smaller activation projects, such as waterfront renewals and boardwalks, to enable people to feel special in the city.



Auckland has a grand vision to become the world's most liveable city, and this guides everything that the city council does. Mayor Brown shared his city's path so far, with a focus on transport issues, planning its economic future, and how the city puts Aucklanders at the centre of its goals. In 2014, Auckland ranked third worldwide in liveability.

For many years, Auckland was in "arrested development", said Brown. There were fragmented and competing governance structures, infrastructure deficits and poor-quality urban design. Car ownership per capita was the world's highest. But in 2010, the city was "thrown a lifeline". The government set up a royal commission to examine Auckland's problems, and its bold recommendations were adopted. Eight separate city councils were combined into "one super-city council".

For Brown, liveability is definitely attainable "because it is measurable". His team looks at 18 indices in areas including giving children and young people a better start in life, fixing transport problems, reducing housing shortage, creating more jobs and protecting the environment.

The Auckland Plan, finalised in June 2011,

details economic, social, cultural, spatial and environmental goals over 30 years, and how to achieve them. It is developed in partnership with the government, NGOs, indigenous tribes and over 15,000 Auckland residents. One strategy is to convert the economy from being import- to export-driven. This would be done by attracting more investment into areas ranging from tourism to creative industries, and working towards making Auckland the "innovation hub of the Asia-Pacific area".

To turn Auckland into a destination, the city adopted a design-led approach that focuses on people. It uses smaller activation projects, such as waterfront renewals and boardwalks, to enable people to feel special in the city.

While Auckland seeks to become more cosmopolitan in outlook, it practises "democracy on steroids", said Brown. This involves making sure people are accepted, including maintaining special relations with the indigenous Maori people by formalising their roles and including them in the decision-making process. ■

LEN BROWN

Former Mayor of Auckland, New Zealand

# CHINA'S URBANISATION NEEDS URGENT REFORM

Compared with developed countries, China has a relatively dispersed population, with less built-up areas within its cities, which suggests inefficient land-use.



Urgent reform is needed for China's urbanisation to work, said Li, an experienced policymaker and renowned Chinese economist.

He referred to Stewart Brand's *Whole Earth Discipline: An Ecopragmatic Manifesto*, which argues that urbanisation's greatest impact is on land use, and that efficiency improvements can foster more sustainable development.

With about four decades of economic reform since 1978, China's urbanisation has grown by about 1% each year. By 2020, China expects to be 60% urbanised, although the annual urbanisation growth rate will certainly slow down. Compared with countries such as Japan, Brazil and South Korea, said Li, China still has room for urbanisation. While working in the central government, Li organised several studies that found that China has relatively few cities of over five million people. China has too few megacities, he said. Only 11% of its population lives in megacities, a lower rate compared to the United States. While one may think that Beijing is large, its built-up area is in fact not large enough, he argued.

Compared with developed countries, China has a relatively dispersed population, with less built-up areas within its cities, which suggests inefficient land-use.

The government has proposed the development of Jingjinji, the Beijing-Tianjin-Hebei urban cluster, to ease congestion by moving some of Beijing's population to this new region. One proposed solution is having a High-Speed Rail to enable the development of another city centre away from the original.

Li reiterated three key areas of reform for China: Land system reform to allow better land transfers and use; fiscal system reform; and social security system reform to cater to rural-urban migration. There is a real need to increase capacity for public services, develop smart eco-cities, manage migrant workers better, and increase expenditure for growth, he said. ■

LI JIANGE

Vice-Chairman, Central Huijin Investment Co., Ltd  
Chairman, Board of Trustees, Sun Yefang Foundation  
Co-Head, Tsinghua University National Institute of Financial Research, China

# Cities and Economies Must Reinvent Themselves



## A NEW WORLD OF CITIES

Let me start by reflecting on three experiences I had with some thinkers. The first is Professor Benjamin Barber, a political scientist from the United States. I met him when I was Prime Minister of The Netherlands. He's now involved in a new organisation, "The Global Parliament of Mayors". He has the conviction that it is necessary to talk in terms of regional and city development. He said that mayors can make a difference, and that it's also about developments at the local and city level. He says that if we want to change things in the world, we need liveable cities.

The second is Parag Khanna, who was an advisor to US President Barack Obama and is considered one of the most influential people in the world.

A few years ago, when he was 33 years old, he authored *How To Run The World: Charting A Course To The Next Renaissance*. His message is that previous centuries were all about the development of nation states, covering legislation, financing, and so on. But today, a lot of issues are above the level of nation states: climate change, security, energy, etc. So, he says: instead of nation states, you will see the development of a world of new alliances—between governments, businesses, NGOs, knowledge centres, etc. He's referring to the role of cities as well, and there you will also find new alliances.

The third thinker is Peter Diamandis, who wrote a fantastic book *Abundance: The Future Is Better Than You Think*. For the many issues on the world agenda—poverty, hunger, illiteracy, human rights,

health—his analysis is that we have so many technical solutions, a lot of innovation, and the possibility to tackle all these issues, but we fail because of a lack of good governance. There are too many vested interests; too many people thinking in old-fashioned ways.

If I bring together these three ideas—Prof Barber's "Global Parliament of Mayors", Khanna's new alliances, and Diamandis on good governance, I think we're in the midst of a world of cities. I would like to make three points. First, some general remarks about liveable cities: what's on our agenda, and why are cities so important? The second bit is the Rotterdam experience, based on my work as Chairman of the International Advisory Board of Rotterdam. And the third part is about sustainability, and its consequences.

The "next economy" is relevant for the development of cities. Hence, people are also talking about the "next city", which is about improving quality of life in cities.

1



CITIES ARE CRUCIAL FOR IMPROVING QUALITY OF LIFE

First, about cities. Today, we're talking more about improving people's quality of life. We discovered that the old Keynesian and neo-classical approaches to economic development have to be partly replaced by a new view of organising things in society. I think that's also why there's so much attention today on the role of cities worldwide.

There is another development—the fascinating world of the “next economy” and the “next city”. The “next economy” means an economy influenced by new developments like robotics, 3-D printing, nanotechnology, and the Internet of Things. It also has a moral category. The “next economy” is a sharing economy. Can you use things together? There is a new relationship between ownership and use of products.

1 The “next economy” refers to an economy influenced by new technological developments such as robotics, 3-D printing, nanotechnology, and the Internet of Things.

2 The Markthal, an indoor market hall in Rotterdam that is co-located with residences and offices. Cities must be creative and sustainable, and constantly reinvent themselves.



The “next economy” is relevant for the development of cities, hence people are also talking about the “next city” which is about improving quality of life in cities.

People do not accept living in an area where it is dangerous, where it is not secure, where the environment is polluted. The next city is also about how you can stimulate the awareness and responsibility of societies and NGOs, and how you can use bottom-up approaches to benefit from the knowledge of people, allowing room for social projects, creativity and start-ups.

ROTTERDAM: TOWARDS THE NEXT ECONOMY AND NEXT CITY

My second point is about my experience in a city like Rotterdam in the Netherlands. The interesting thing about Rotterdam is that it is constantly reinventing itself. You can change a city when there is a willingness to change things. For example, young people with their cultural, social, environmental and economic projects—you can learn so much from these young people with their dreams and ideals. The good thing is that the local authorities are taking up these bottom-up initiatives.

A city like Rotterdam is about creativity and sustainability. The Port of Rotterdam has a strategy called Rotterdam Port Vision 2030. It wants to be a sustainable port. Its criteria is stricter than other ports in Europe, and now people from Singapore and Brazil are coming to Rotterdam just to learn more about the concept of a sustainable port. We also see new concepts of local production of food and energy. In Peter Diamandis' book

We need to have new alliances.  
Companies cannot act alone.  
If you want to act, you need to  
work together with others.



*Abundance*, he says that if you have four or five big apartment buildings in New York City, and you use new agricultural techniques, it would be enough to feed everyone in the city. This is the type of insight we are seeing more and more of.

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Rotterdam is indeed about the “next economy”, the “next city”—it’s about doing the right things for society, about bottom-up strategies. That’s why people are so enthusiastic about Rotterdam’s developments. It’s a city that knows that if you’re happy about the results of the past, that’s not enough. A real entrepreneur will always innovate, because if there is no innovation, you can forget about it.

In the International Advisory Board of Rotterdam’s most recent report, we said that there should be five dimensions on our cities agenda: good governance, making the city realise all the different developments, social development and responsibilities, sustainability and supporting the next economy. We also identified four major themes. First, you have to try to connect all the networks from schools, universities, companies and government organisations. The second theme is: dare to experiment.

To give an example, I was in an old car with a man who was an ex-criminal, and he was constantly smoking. He has seen the bad side of society. When he left jail, he said: “I only want to do one thing. I want to convince young people that they have to work on a better quality of life and, in any case, they should avoid going into prison.” He knows the language of young people and he says to them: “You must have training. Try to get a job. Be honest, don’t steal.” I think

we should have room for these experiments. The third theme is: transparency and accessibility of the system. The fourth theme is: storytelling and communication. It always helps when you have a nice story to tell, because then you can convince people. It’s about dreams, about realising new developments.

A NEW BUSINESS CASE FOR SUSTAINABILITY IS BEING EMBRACED

My third point is sustainability. We have to be aware that we will have nine billion people on Earth in 2050, with scarce natural resources and climate change issues. One thing is clear: we cannot go on the same way—we have to rethink our way of producing and consuming or we will have big difficulties in the future. There is also the connection with the “next economy” and the “next city”. I think things are changing.

One thing we need to do is create shared value. Milton Friedman, the famous management guru, said in 1970: “The business of business is business.” You have to do it in the right way, respect the rule of law. Today, we have Michael Porter, a management guru from Harvard Business School, and he says no, it’s about creating shared value.

3 A rooftop farm in Brooklyn, New York City. Local, urban production of food is another way in which cities can be creative and sustainable in trying to meet their demand for food.



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A company is there to generate economic value, but you also have to generate social value by addressing the needs of society.

We need to have new alliances. Companies cannot act alone. If you want to act, you need to work together with others.

Unilever integrated sustainability into their business model: they have a strategy called “Sustainable Living Plan”. When they had their first-year evaluation, it was not an internal Unilever event, but an event with all their partners in the value chain. Also invited were other companies, NGOs,

government officials and academics. We will see more of such new alliances.

We must have more focus on the long-term. In the 2008 global financial crisis, we saw what the consequences of short-term focus on making profit can be. If you fail at having a long-term focus, then you will get into difficulties. It’s true, the discussion about corporate social responsibility has been there for decades, but something has changed. Today, we say growth is part of human nature, but not at all costs. It must be sustainable growth. Now, when we talk about sustainability, the question

4 Built to create Marina Reservoir in downtown Singapore, Marina Barrage was also designed as a public green space. Visitors can picnic on its green rooftop, and take part in water sports in the reservoir.

If you want to do business today, it’s also about your role in society. It’s not only about being active as an entrepreneur in the traditional sense, it’s now about choosing quality of life.

is: how can it influence and change your business model and strategy? Are you integrating those components in your business model?

There is a business case that it is possible to be profitable by choosing sustainability. Prof Robert Eccles of Harvard Business School made a comparison between 90 high-sustainability companies and 90 low-sustainability companies between 1993 and 2010. The outcome was that high-sustainability companies had a higher rate of return on investment, a better position on the stock market and a better reputation than the low-sustainability ones. There’s enough proof that it is possible to change things if you have the willingness to rethink your business model.

Also, if we choose sustainability, it must be an honest story, and that is about measurement and reporting. Auditors will have another task and responsibility in the future. Now, it’s about delivering assurance on the financial performance of a company. In the future, it will be about integrated reporting, about the social

and ecological performance of the company, and the integration of both. That means that accountants and auditors need a more holistic approach.

ECONOMICS, SOCIETY AND ECOLOGY ARE ALL CONNECTED

There’s a connection between the future of cities, the Rotterdam experience and the world of sustainability. There was a time when we tried to split everything up. You had economic researchers for economic issues, social scientists for social issues, environmentalists for ecological issues. Today, we know that you must have a holistic approach. What’s happening in energy is relevant to climate change. What’s happening with climate change is relevant for migration. All these issues are connected.

If you want to do business today, it’s also about your role in society. It’s not only about being active as an entrepreneur in the traditional sense, it’s now about choosing quality of life.

Therefore, you can see new relationships forming between

governments, universities and businesses. When I was a student, we had a kind of left-wing approach. Profit was a kind of dirty word in left-wing political circles in my country. That time has changed completely. We need business. We need each other. We are in a process of transition, and therefore, it’s so important that we are working together and redefining strategies. So the concept of the “next economy”, the “next city”, liveable cities, the role of businesses...these are all related themes.

The last book I would like to mention is a beautiful book titled *Why Nations Fail*. It is by two professors, Daron Acemoglu from Harvard University, and James Robinson from the Massachusetts Institute of Technology. For 15 years, they did research on 3,000 years of world history. Their key question was: under what conditions can countries be successful, or not? Their answer was threefold. First, if you want to be successful, you must always have the willingness to innovate; there must be room for disruptive change and creative destruction. Second, you must have rule of law—integrity, transparency, and no corruption. Third, you must have inclusive institutions. People must be able to share in the revenues of growth, because if revenues are only disappearing into the pockets of communist or capitalist elites, then you will have difficulties. There has to be fairness. ■

PROF JAN PETER BALKENENDE  
Chairman, International  
Advisory Board Rotterdam  
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# CITIES HAVE NO CHOICE BUT TO ADAPT TO CLIMATE CHANGE



A CITY'S "SOCIAL INFRASTRUCTURE" DETERMINES LIFE AND DEATH

We have released so much carbon dioxide and other greenhouse gases into the atmosphere that, even if we could stop all greenhouse gas emissions right now, we would still face centuries of climate change. This means higher sea level rise; more frequent, intense and longer-lasting heat waves; stronger hurricanes and greater floods. We have no choice but to adapt.

But there's a problem: adaptation is expensive. There's a risk—a certainty, to be honest—that it will inevitably exacerbate old inequalities and generate new ones too. People lucky enough to live in nations, cities or neighbourhoods that have resources will be better able to protect themselves. People who live in poor

places will be left exposed. It's a biting irony, because affluent people and places are the most responsible for greenhouse gas emissions.

In the wealthiest cities, securing yourself from the ravages of climate change is no easy task, even if you have resources. I want to call attention to two facets of climate security. One is hard infrastructure—the kind of thing that Singapore has invested so much in, with sea walls and gates and other flood management systems. The other aspect is unusual for these conversations: the social infrastructure, which often determines life and death.

## CHICAGO'S DEVASTATING HEAT WAVE

In Chicago in July 1995, summer temperatures got extremely high. We had the urban heat island phenomenon—concrete and steel

buildings attract heat from the sun, and pollution from industrial facilities and cars trap the heat. You don't get evening cooling as in other environments, so it was also extremely hot at night. We all take air-conditioning for granted, but in American cities the electrical infrastructure isn't so reliable anymore, so the system falls apart. In Chicago, about 250,000 households, maybe 700,000 people, had no power, some for more than two days. In a high-rise building in a big city, the elevators fail when there's no electricity. Water is pumped up electrically, so with no electricity, you also don't have water. If you're older, frail or disabled, you're really trapped.

In the US, when it gets very hot, especially in poor neighbourhoods, people open up fire hydrants to get water. So many thousands of fire hydrants were opened at the same

Interestingly, culturally, in many parts of the world, we have failed to recognise that heat is something very dangerous.

1



There is the tendency to treat disasters as public relations crises rather than public health problems. Many governments try to make sure no one really pays attention, because they don't want to be blamed.

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time that neighbourhoods lost water pressure. The city had to send police officers to prevent residents from opening up hydrants. They started to fight over this basic resource.

The heat will break down your body. Very quickly, people began to get sick. Many were trapped in their apartments, and children got dehydrated in buses that were stuck on gridlocked streets. Thousands went to emergency rooms for heat-related illnesses. Half the hospitals couldn't take any more patients and closed

their doors to new patients. There was no system for coordinating which emergency rooms were open, so ambulance drivers had to drive all over to look.

Interestingly, culturally, in many parts of the world, we have failed to recognise that heat is something very dangerous.

In Chicago, people didn't think about heat as a health issue. Many city leaders were on vacation. When it gets very hot in most societies, people with power and money go out of town. That's not a moral statement; it's a sociological one. City leaders forgot about a heat emergency plan they had developed, and didn't use it. During the week, 739 people died. And since heat-related illnesses can have ripple effects that last the rest of your life, many more faced serious consequences.

What was really disturbing to me as a sociologist is that hundreds of people died alone, and many were discovered in their apartments days or even weeks after they died. They tended to be older and poor. I called *Heat Wave*, the book I wrote about this event, a "social autopsy" of this natural disaster. It's a social disaster as well. We need to understand the sociological underpinnings.

The map I created showing areas with the highest heat-death rates and those with concentrated poverty aligned almost perfectly—they were all very racially segregated African-American neighbourhoods. But what was scientifically more interesting was that many poor neighbourhoods actually fared better than the most affluent ones. I decided to go out and really get to know a bunch of

neighbourhoods to understand if there's something about the texture of places that helps explain these different outcomes.

Two neighbourhoods in Chicago—both 98% African-American ghetto neighbourhoods, very segregated, extremely poor, with unusually high violent crime rates—had totally different outcomes. One neighbourhood, Englewood, had been abandoned and depleted—no stores or movie theatres, with broken sidewalks and parks that were fairly threatening. People who were older and frail tended to shut themselves in during the heat wave, and so, were 10 times more likely to die.

1 The devastating 1995 heatwave in Chicago killed 739 people. While highest death rates were concentrated in impoverished neighbourhoods, studies also found that strong social infrastructure and community ties helped save many lives.

2 Damaged homes in Connecticut in the aftermath of Hurricane Sandy. The storm caused economic damages amounting to about US\$60 billion.

By contrast, in the Auburn Gresham neighbourhood, just across the street, even though the buildings baked like ovens, street conditions were more likely to draw people into social life and have contact with the neighbours. Saving someone's life in a heat wave is relatively simple. It involves seeing that they're suffering and finding a way for them to get cool. If you had this, you fared much better than if you didn't. Social infrastructure saves people's lives during heat waves, but also every day. If you lived in Auburn Gresham, your life expectancy would be five years longer than in Englewood across the street. Understanding what breaks down during disasters helps us understand everyday conditions of neighbourhood life that we could pay more attention to. The one silver lining of disasters is that we can learn from them, so things go better the next time. But Chicago refused to do that.

There is the tendency to treat disasters as public relations crises rather than public health problems. Many governments try to make sure no one really pays attention, because they don't want to be blamed.

When Chicago published its big report about the heat wave, the phrase "heat wave" does not appear anywhere on the cover, and there's a snowflake on it. It was designed to make sure no one ever knew about it. Climate change brings "black swans"—weird weather we never thought we'd have to prepare for. If we don't stop and learn from a disaster, it's much easier for the next city and leader to say: "How could we have known?" But we should have known.

HURRICANE SANDY AND NEW YORK CITY'S 19TH CENTURY INFRASTRUCTURE

Many of us who live in wealthy, thriving cities are tempted to think that we will be taken care of and protected if a storm hits. We believe that our infrastructure will work. The power will stay on; our phones will operate; the flood waters won't come in. But that's not really true. We learned this in New York City in 2012, when a storm called Sandy hit 20 states in the US and smashed into Manhattan, the financial centre of the world. We were out of power for five days, and it was out even longer in some places nearby. The economic impact of Hurricane Sandy was about US\$60 billion.

What happened? As in many regions in the world, the way the electrical grid works, we hang electrical wires on poles underneath big trees with large branches. Every time there's a big wind storm, branches fall, wires go down and everyone loses power. The authority that handles power in this region, Long Island in New York, held an emergency meeting a few days before



3 Climate adaptation is expensive, and existing inequalities will be exacerbated by climate change. This image of an impoverished favela (Brazilian-Portuguese for slum) next to a wealthy private residential development starkly captures the gap between São Paulo's rich and poor.

How do you make sure communities continue to work well? The way you prepare for emergencies is actually not by telling people to prepare for storms. It's by making sure their local community life works well every day. If you find the way to do that, the odds are that people are going to be able to protect each other when they really need it.

Sandy. They saw it coming, but spent less than one minute talking about how to prepare. They didn't, for instance, prune back the trees to make sure there was less risk that the system would go down.

During storms, New York City's subway lines fill up like bathtubs. The system is not built to withstand the weather of the future; it was built for 19th century weather. The communication grid also failed. Previously, when we had copper wires underground connecting our phone system, these were relatively resilient. Now, increasingly, we all carry mobile phones. Mobile phone systems depend on electricity. They are connected by towers that can be blown over very easily. In the US, the Federal Government considers mobile phones to be entertainment devices, not life lines, so regulations are very loose. Standards for maintaining

service are much looser than they used to be for the telephone system. During Sandy, having no communication was one of the most profound problems. I know New York City is not alone in trying to solve this situation.

New York City requirements for zoning ask hospitals to put things such as vital systems for power and backup fuel for generators in the basement because it helps prevent chemicals from circulating in the air. But we didn't think about flooding. Now, we live in a different world and it can flood here. During Sandy, hospitals lost their backup power. Elevators didn't work. Premature babies had to be carried by hand, down nine floors with air being pumped into their lungs by paper bags, transported into ambulances on the street during a hurricane. Not a single one died. But if we don't design our cities and systems to deal with threats we now face, we would require heroic action [like this] to keep ourselves alive.

BUILDING SINGAPORE-STYLE SOCIAL RESILIENCE

What can we start to do to protect the cities we live in, where we have so many people now living in harm's way? How do we think about climate security as a collective project? There are places that could not have existed if we didn't build large sea gates to keep the water out. There's no New Orleans without the levee; no Rotterdam, no Netherlands, without big sea walls. Venice is about to be saved by a flood protection system they call MOSE. But these measures are big, expensive and difficult, and they don't always work. You can't

4 This 2009 fire in the Angeles National Forest, USA, was the largest wildfire in the history of Los Angeles County, threatening communities nearby to the city of Los Angeles. Climate change has led to increasing incidences of extreme weather events that will impact cities and their residents.

protect every coastal city. If we build gates, first of all, they're very, very expensive. But also, if you have to keep the gates closed most of the time, you're changing the ecosystem behind it. So, gates have not been the best solution.

If we're going to invest in climate security, let it be about improving the quality of our lives, communities and cities, all the time. And not only making sure that the disaster that may happen, doesn't happen. It's about the whole world that is created for residents and visitors who want to see, for example, what the Marina Barrage looks like. What I have really tried to advocate in the policy work I do, borne out of social scientific work, is to come up with designs like the Marina Barrage that will serve multiple functions.

Can you design a drainage system, in this case, that will help relieve the threat of flooding but, at the same time, have additional benefits for daily

life? In an article for *The New Yorker* magazine about how cities could adapt to climate change, I wrote many paragraphs about Singapore because I think you're really doing some good work here.

Let me ask you to join me in thinking about how we can start to learn from what we've experienced, and begin to remake cities for the world we're entering. No matter how we design things, no matter how brilliant our engineers, at some point things will break down. And that's when all the social things really start to matter. If something like supporting community gardens could do something for the social resilience of cities, that's worth paying attention to. Those depleted neighbourhoods in Chicago could really use gardens, to bring people of different generations together in the neighbourhood.

How do you make sure communities continue to work well? The way you prepare for

emergencies is actually not by telling people to prepare for storms. It's by making sure their local community life works well every day. If you find the way to do that, the odds are that people are going to be able to protect each other when they really need it.

We all have to start to reconnect with the ecological environment in a more profound way. Climate change is making us re-imagine the places we live in and know. If we were in Chicago and you said, "What should the government do to improve community conditions?" I'd tell you: we have a lot to learn from Singapore. The quality of housing, infrastructure, parks, density of commercial life—these would be the fantasy of the most endangered neighbourhoods elsewhere. There's a social infrastructure here that keeps most people healthy and safe, most of the time. That comes from a real public investment in a high-quality public realm.

But not even Singapore can be complacent. The climate has changed. More storms are coming. They will likely be bigger and more dangerous than the storms we've seen before. The population is changing too. There are more old people, more people living alone and at risk of isolation. Regardless of the weather, they need special support. ■

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4

# WHY WE NEED A NEW SCIENCE OF CITIES



## THE ROOT OF EARTH'S PROBLEMS: RAPID URBANISATION

The world's population is seeing an exponential expansion, mostly going into urbanisation. It's true for almost the entire planet, especially the developing world. Urbanisation crossed the 50% mark globally a few years ago, and about 80% of the world's population will live in cities towards the end of this century. That's equivalent to urbanising roughly one and a half million people a week, adding a New York City every two months, or a Singapore every month, continuously, till 2050. This is extraordinary in terms of the stress on resources, energy and, in particular, the social fabric. This is an enormous issue and challenge to the planet, and we are all part of it.

Human beings are on this vertical rise, on the grand scale associated with the paradigm growth trajectory we invented 200 years ago. Everything

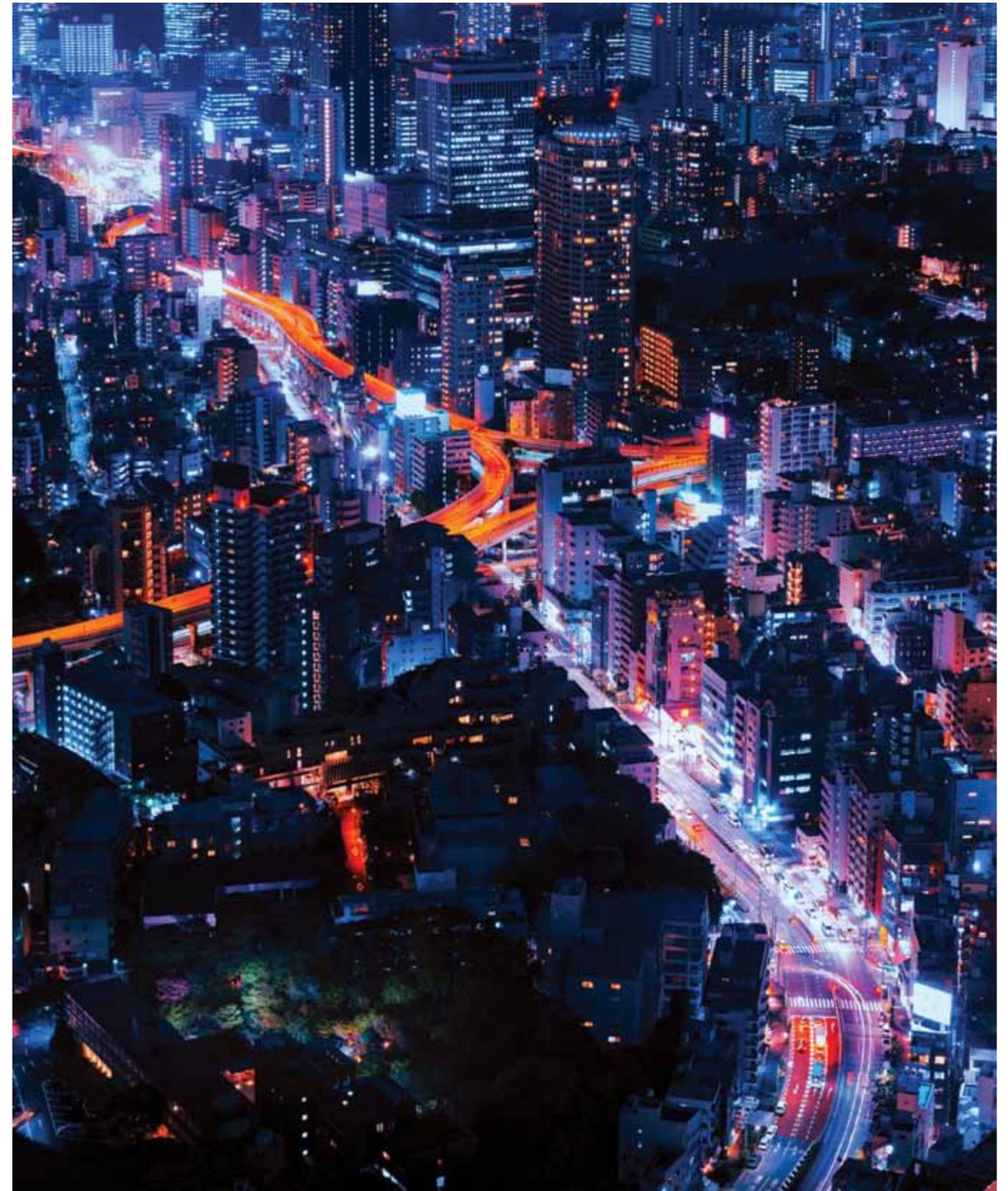
is now based on the idea that we need to sustain open-ended exponential growth. So, the fate of the planet is determined to a large extent by the fate of our cities. Understanding what goes on in cities, the dynamics of their structure, becomes something of urgency.

Cities are associated with greater material well-being—greater opportunity to jobs, access to almost everything. Not only material well-being, but also cultural activities, various kinds of education, restaurants and so on. What is so attractive about cities? All of this has to be driven by energy. And as the fundamental law of the universe, if you transform energy, you produce entropy somewhere—pollution, so to speak. By transforming that energy, building up extraordinary places like Singapore, some inevitable result of this is socio-economic entropy. The question is how we can minimise it.

When you use the word “cities”, you think of buildings, cityscapes, streets, gatherings. But what you really want in cities is people. The whole point of cities is to facilitate the interaction of people, the gathering of people both formally and informally. This activity is the essence of a city. It's entrepreneurial activity. Creating ideas, wealth, and a certain buzz. It's that churning, creating atmospheres like this for both innovation and growth creation.

The physicality of the city in terms of energy resources that will go into the metabolism of the city, represented by the infrastructure, has to be integrated with its exchange of information. The point of the city is to maximise its exchange of information to create ideas. All the problems we're facing on the planet today, from climate change to questions of resources—energy, water, health, pollution and so on—originate in cities because that's where most

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energy is being transformed and where most people live.

Cities are the origin of all of the problems we face, but also the solutions because cities are magnets that suck up smart people. Ideas, innovation and wealth are created almost entirely in cities.

Is any of this sustainable? From this, I conclude that we need to have sustainable cities, if we are to have a sustainable planet.

We desperately need to ask the question: “Is it possible to have a theory, a science, of cities, that is quantitative and predictive? It has to involve all of these kinds of concepts: resilience, evolvability, growth, scalability, and so forth. They all come together; each one is a complex, adaptive, evolving system.

Most importantly, they’re not independent. They’re all coupled, all part of a systemic problem. One of the things you learn when you study complex adaptive systems is that, if you only treat one piece of it, then you are very likely to have unintended consequences that will change everything else there. All these need to be thought about in one unified framework.

1 Cities contain buildings and streets, but what they need is people. Cities facilitate the gathering of and interaction between people, generating buzz, ideas, innovation, and wealth.

2 In biology, larger organisms are more efficient and have a greater economy of scale. Cities scale similarly—if you double the size of a city, it needs only 85% more gas stations, not twice as many.

ALL CITIES HAVE THE SAME “BIOLOGY”

We talk about the metabolism of a city, the ecology of the marketplace— all these kinds of metaphors. Are these just metaphors, or is there some serious substance behind it? What I find most intriguing is that all companies are destined to die. No company survives. It doesn’t matter how grand or rich they are. But almost all cities survive. It’s very hard to kill a city. You can think of ancient cities that have disappeared, but most cities growing on this planet still exist. You can even drop atomic bombs on cities and 20, 30 years later, they’re fine.

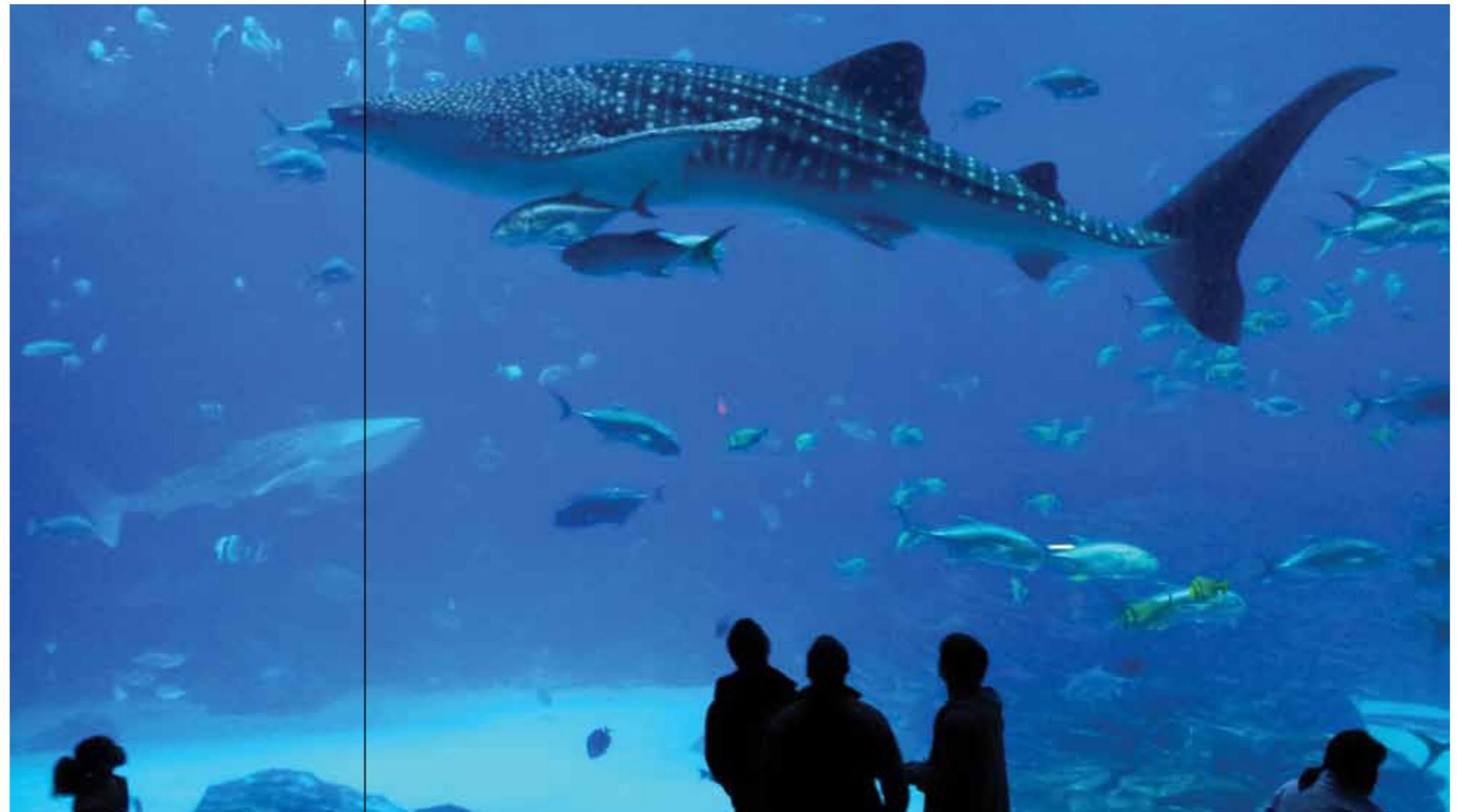
In biology, as you get bigger, you get an increasing economy of scale. In a highly systematic way, the bigger you are, the more efficiently you use yourselves. You are more efficient than your dog, but a horse is more efficient than you are. What is even more extraordinary is that the same kind of scaling holds true for any physiological variable or anything that measures life history, for example, heart rates. Everyone has exactly the same character. They all scale in this very simple way when plotted in this logarithmic fashion. The slopes of the graphs are almost always some simple multiple of one-quarter. The magic number of life is 4.

Big things live slowly but for a very long time, and little things live very quickly for a very short time. One thing we have in common is that we are sustained by networks. We’re just a bunch of networks: your circulatory system, renal system, respiratory system, bones, neurological system, and so on. Biology has these extraordinary scaling laws that express

an extraordinary economy of scale—the bigger you are, the less you need per capita. The pace of life systematically slows down the bigger you are. You grow, then you stop, and then you die.

This curve is beautiful for biology but it is considered disastrous in socio-economic systems. The President of the USA gets clobbered if he says that the growth for this quarter was only 1.2%, not 3%.

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We desperately need to ask the question: “Is it possible to have a theory, a science, of cities, that is quantitative and predictive? It has to involve all of these kinds of concepts: resilience, evolvability, growth, scalability, and so forth. They all come together; each one is a complex, adaptive, evolving system.

All the good things in cities—income, wealth, patents, colleges, creative people, restaurants; and all the bad—disease and crime—increase by about 15% every time a city doubles in size, and, at the same time, you save 15% on all the infrastructure.

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Are cities scaled versions of each other? Is there any universal behaviour? Cities are, of course, extraordinary network systems—all the roads, pipes and cables you can't see. But cities are not only buildings and roads; they really are people. Looking at how cities scale, you have an economy of scale, but the slope is not as it is in biology—not 0.75—but much more like 0.85. So, if you double the size of the city, you don't need twice as many gas stations, you only need 85% more. We looked at data from everywhere. It turns out to be the same for any country you look at.

All the good things in cities— income, wealth, patents, colleges, creative people, restaurants; and all the bad—disease and crime— increase by about 15% every time a city doubles in size, and, at the same time, you save 15% on all the infrastructure.

What is the universal mechanism that makes cities that had essentially no interaction during their evolution end up having the same common behaviour? The one thing common to all cities is that they have people, and are there for people. Social networks are the same across the globe.

3 Tokyo, Japan. Cities are the origin of all the problems we face, but also the solutions, because ideas, innovation and wealth are created almost entirely in cities.



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Different histories, cultures and geographies are irrelevant. People all have essentially identical biology and genes, and it manifests in the way we interact. We all have pretty much the same number of children. There are anthropological and psychological studies that claim that if you ask how many people the average person has powerful interactions with across the globe, it's always between four and six. It's not 150 Facebook friends, it's five people. They're usually your parents, children, lovers, very close friends. And there's a kind of hierarchy.

There may be 15 people you are very good friends with, but not as intimately as you would be with the first five. So, there's a structure that seems to have a kind of universal quality that transcends culture. Amazingly, that is determining why cities look the way they do.

OPEN-ENDED EXPONENTIAL GROWTH WILL SURELY COLLAPSE

I want to relate these ideas to the growth of cities and to consider some implications. These scaling curves are consistent, but they have a dire

4 A view from space of the earth at night, with urban lighting visible.

If you want to continue on this trajectory and maintain open-ended growth, then we have to have, in the next 15 to 20 years, another major innovation comparable to the information technology revolution.

consequence—the system cannot continue. You're going along this curve. Life is getting faster. You will collapse. Somewhere along the way, you'd better reset the clock, by discovering iron or inventing computers, or whatever. That would mean you can start again and go on. Of course, it would eventually collapse for the same reason. So, you'd better make another innovation. And so it goes on. If you want to have open-ended growth, which is what we have demanded, then you have to be continuously on innovation cycles. You have to be resetting the clock or reinventing yourself in some way.

But there's another catch—when you normally go along one of these curves, you're getting bigger, life is getting faster, but the time between those innovations is getting shorter. Something that might have taken 100 years to develop 500 years ago, now takes only 15 years. And the next innovation should take less than 15 years, maybe 10 or 12 years.

If you want to continue on this

trajectory and maintain open-ended growth, then we have to have, in the next 15 to 20 years, another major innovation comparable to the information technology revolution. These scaling curves represent some average idealised city. But every city either over-performs or under-performs relative to it. When you look at one of these scaling curves, you can rank cities on how well they've performed. For example, are they gaining more patents than they should for a city of their size? Cities are very hard to change, and this is useful for gauging the success and performance of cities.

The big issue for Singapore is, you're not part of a larger urban system, so you have nothing to mobilise yourself against. You're independent. You're by yourself. You're unique. What does it mean to be a global city? Is there a global urban system? And where do we sit? Are we over-performing, which appears to be the case? Or maybe under-performing in some things,

and what is that trajectory?

I would say that my own conclusions from this work are quite pessimistic. The whole system is destined for collapse unless we make a major, complete revolutionary change. The idea that you can have this continuous open-ended growth is not conceivable. I don't think the system will survive, because each one of those curves is an increase in the pace of life, as if you are on a treadmill that is going faster and faster. Every once in a while, you have to jump from that treadmill to another treadmill that's going even faster. And you have to make that series of jumps faster and faster.

So, it's hard not to see that the socio-economic system will have a heart attack. Something very serious will happen. My speculation is that it will manifest itself in social unrest, which will get more and more serious as various segments of population around the world find themselves caught in this phenomenon, and basically can't keep up. Had we been thinking along these lines 75 years ago, we might have been able to do something about it. The big issue is not that we can't make change, it's that we can't make it fast enough. We are right at the edge of the cliff. ■

DR GEOFFREY WEST  
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# Seoul's New Low-Growth Development Model

“Plans should be based on citizens’ intentions and desires, even though the process or the result could be crude. Professionalism versus political consensus... in Seoul, we’re in the process of finding the right way.”



A new paradigm of urban development embracing innovation, community participation and economic revitalisation is needed for cities to answer 21st century challenges, said Dr Kim.

East Asian metropolises such as Seoul, Singapore, Tokyo and Hong Kong are facing new challenges. “Contrary to past trends, we encounter low [economic] growth rates, low birth rates, new social conflicts and low development demand,” he said. The key issues include an increase in poverty and inequality, a greater need for welfare and social safety nets, social exclusion of groups such as the unemployed young and immigrants, and urban degeneration. “We need a new kind of urban political mechanism to ease citizens’ impatience and anxiety,” he added.

Dr Kim, who was part of the Seoul municipal administration’s efforts to meet these challenges, noted that after the 1997 Asian financial crisis, government-led economic strategies reached a fundamental limit. Entering the 2000s, Seoul endeavoured to find a new development model for this stage of low growth. Seoul’s priorities have been: first, to fix the side-effects of development

with citizen participation; second, extend welfare services; and third, improve quality of life and the city’s revitalisation without dependence on large-scale construction projects.

Harnessing the population’s talents and creativity is another major thrust of Seoul’s policies. The city’s mayor, Park Won-soon, he noted, always emphasises citizens’ innovative potential and urges city officials to listen to the ground.

“Plans should be based on citizens’ intentions and desires, even though the process or the result could be crude. Professionalism versus political consensus...in Seoul, we’re in the process of finding the right way,” said Dr Kim.

He was optimistic that Seoul can escape the legacy of over-development and its associated problems because of the city’s dynamism. “A city is like a living organism because of the people. People are the owners of the city, not simply customers. As long as people live, the city will revive,” he said. ■

DR KIM SOO-HYUN  
President, Seoul Institute, South Korea

# HOW CITIES CAN LEAD IN URBAN DEVELOPMENT

“The most resilient communities that can respond to crisis are not those with the most financial resources, but those with the closest social networks.”



Once a dead part of town, Union Station in Denver, USA, has since been transformed into a successful mixed-use development. This project, led by a public-private partnership that attracted investors and created creative economy opportunities for the people, was realised with the will of the mayor and citizens, said Prof Taylor. The station was remodelled into a major transportation hub connecting 23 municipalities through various transit modes. Such a complex undertaking required an adaptable approach—things were shared rather than owned individually, flexible rather than permanent, and were very much site-specific. This project saw five government entities coalesce into a single authority. “We wanted to take advantage of citizens’ requests that we shift to a transit-oriented world, and away from a car-oriented world,” said Prof Taylor.

Having worked on major projects in Singapore over the last few decades, she shared her admiration for the great strides the city had made. She urged Singapore to continue giving the public realm more attention, creating more space for walking, cycling and

simply hanging out. What makes Singapore so vibrant, she said, is the mix of scales that give the city “personality, specificity and identity”, as seen when looking over the roofs of Chinatown. “Not everything has to be a housing estate or a dense office district; these things are better when interwoven,” she added.

Prof Taylor also observed new levels of engagement between the public sector and communities. It is no longer just about seeking opinions and adjusting plans, but asking citizens what comes next. She said, “The most resilient communities that can respond to crisis are not those with the most financial resources, but those with the closest social networks.” Citing how the Singapore government engages in “more constructive self-criticism than any other set of public officials I’ve ever seen”, she suggested that the local community and government should work even more closely together. ■

PROF MARILYN JORDAN TAYLOR  
Professor of Architecture and Urban Design  
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University of Pennsylvania, USA

# THE FUTURE OF PORT CITIES: MORE THAN JUST SHIPS



## ANTWERP: REJUVENATING OLD PORT AREAS

The secret of Antwerp is that it is an inland seaport, 80 km from the sea, but big vessels can reach it. The river has always been the source of our prosperity. Antwerp grew throughout medieval times to become a very big city. In the 16th century, it was the biggest city in Europe after Paris, and certainly the most important. It was the capital of trade, culture and commerce. Today, we still think we're the most important city in Europe, but unfortunately for us, the world has changed quite a bit.

It took us from the 16th century to 1980 to reach 100 million tonnes of cargo. It took us 25 years to double that to 200 million tonnes. We certainly hope we can progress further. In 2015, we were one of the world's fastest-growing container ports. This had a lot to do with the investments we made to ensure

nautical accessibility of our port with the deepening of our river—a very important project to handle bigger ships of 13,000 TEU (twenty-foot equivalent unit). The number of ships reaching Antwerp is rising. Just last month, we opened the Kieldrecht Lock, the largest in the world; we broke our own record. We're still investing and we hope to build an entirely new tidal dock.

But there's a downside—rapid change and a port that physically moves away from a city leaves you with zones that are abandoned. Re-engineering the port and industrial areas into new areas of opportunity is a big task. I would like to present two cases where we have started to work on this.

The first project is in the south of the city. Here, in the early 20th century, we had the first petroleum harbour of Europe. Nowadays, petroleum harbours are not so far upriver; it's impossible with the vessels of today. So, what you get

is a mostly abandoned industrial site, looking like a post-apocalyptic site where you could shoot horror movies. It's polluted ground so nobody wants to invest in it. Certainly, nobody wants to live there. And it's very near to the historical city centre. The old quays, built in the 19th century, are on a brick wall, and the wall is beginning to slide into the river. Parts of the quays are totally unstable, and it would be very dangerous to put something on there. So, a lot of work has to be done.

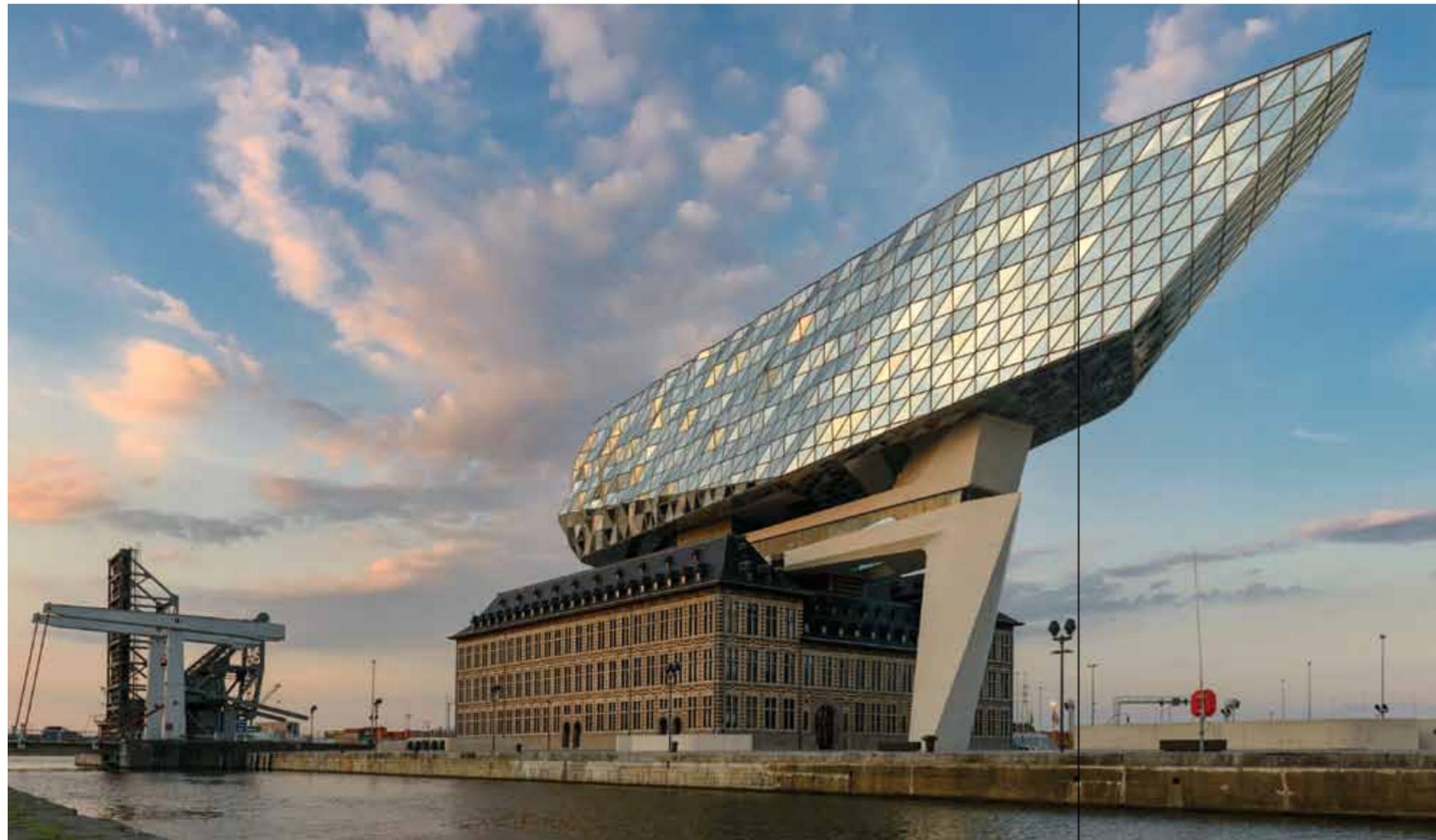
We started the Blue Gate project to transform this entire site into a sustainable, innovative and water-bound industrial site, built to meet the highest standards of sustainability. We want to attract high-level, innovative companies. We will build a heat network there to make the entire site CO<sup>2</sup>-neutral—even negative, if possible. This month, we will start the sanitation of the polluted ground. The end result, hopefully, will be new quays.

We will have three zones. The first is a logistics zone where inland vessels

1



It's possible to transform old port areas into new urban and industrial areas, but you need three things to get going: First, a vision and a plan; second, long-term work and perseverance; and third, public investment and public-private partnerships to draw in more private investors.



can load and unload products, on a site of more than 13 ha. This site will be available for smart logistics, including city distribution, a major technique to enhance quality of life in our city. Transport by water is, of course, a very sustainable form of transport. The second zone will be a production zone where a new company, Bexco, is already being installed, to produce high-tech ropes for the offshore industry. The third zone will be a research and development zone, in which the most important project is Bluechem, an incubator for sustainable chemistry. Bluechem, the chemical sector, the city, the university and other partners like the Flemish Institute for Technological Research will work together to make an incubator for sustainable chemistry.

The second project is in the north of the city, the historical 19th century port that we want to transform into a residential, office and cultural area called *Eilandje*, the Little Island. In the 1990s, we hired a Catalan architect, Solà Morales, to create a global vision for this area. The first projects were the renewal of old warehouses into fancy offices and lofts, the construction of a nice marina, and a bit of a garden city—something we picked up after visiting Singapore. And we said goodbye to very bad old habits like using a nice part of your city just to park your car. That's unthinkable nowadays.

It's possible to transform old port areas into new urban and industrial areas, but you need three things to get going: First, a vision and a plan; second, long-term work and perseverance; and third, public

investment and public-private partnerships to draw in more private investors.

Antwerp is also trying to be a “beta-city” for innovation, where you can start up a business, scale up, and find a test audience. We cannot be an “alpha city” like London—we're too small. For our Urban Living Lab, we put in sensors and two radiophonic networks in the entire city. Anyone who has an application for the Internet of Things can come to Antwerp and immediately test it on 200,000 people. You find your first market, scale up, and hopefully, we can pick the fruits from that. ■

BART DE WEVER  
Mayor, Antwerp, Belgium

1 The Museum by the River, called *Museum aan de Stroom* in Dutch, opened along the waterfront in 2011 and is the largest museum in Antwerp.

2 The Port House in Antwerp, called *Havenhuis* in Dutch, was repurposed from a derelict fire station.

YOKOHAMA: BECOMING AN ENVIRONMENTAL SHOWCASE

As a global city, we are striving to make Yokohama more attractive. In 2008 and 2013, our African development city partnership was formed. In 2014, Yokohama received a special mention from the Lee Kuan Yew World City Prize. In 2017, we were selected to host the Asian Development Bank's 50th annual meeting.

In our urban development, we focus on the relationship with the port because it is the city's strength. To mould the central waterfront area into the face of a charming global city, we are currently developing the city centre based on three pillars:

- (1) Development of business and industry that propels Yokohama's next-generation vitality;
- (2) Development of a Yokohama style of living in which creativity and citizen power thrive; and
- (3) Development of a city centre that integrates the charm of the city's many unique characteristics and develops together with the port.

The Minato Mirai 21 district occupies 186 ha in that central waterfront area. The concept was announced in 1965 during Japan's high-growth period. Because of the concentration of the economy and population in Tokyo, Yokohama had suffered the negative effects of dramatic inbound migration and chaotic development in the capital. Yokohama became more of a suburban commuter town and lost its identity as a business region.

The main focus [for Yokohama] was to transform the character of the area between the two city centres away from piers and shipyards, with excellent city design.

Access from Tokyo was improved, and now, about 200,000 users use the subway line from the capital every day. As of 2015, the Minato Mirai 21 project has hosted around 1,770 companies and 102,000 employees, and about 76 million people have visited this area. Economic activity is valued at approximately US\$17.5 billion, and leading companies such as Nissan, Shiseido, Mitsubishi Heavy Industries, Fuji Xerox and Lenovo have established a presence in Yokohama.

Among our future initiatives, a cruise ship terminal will be completed in 2017 to attract more cruise ships. In 2020, we hope to have new MICE facilities completed, increasing the city's value for international tourism and MICE destination hosting. Yokohama is also looking for more technological collaboration to become an environmental showcase. ■

TOSHIHIDE HIRAHARA  
Deputy Mayor, Yokohama, Japan

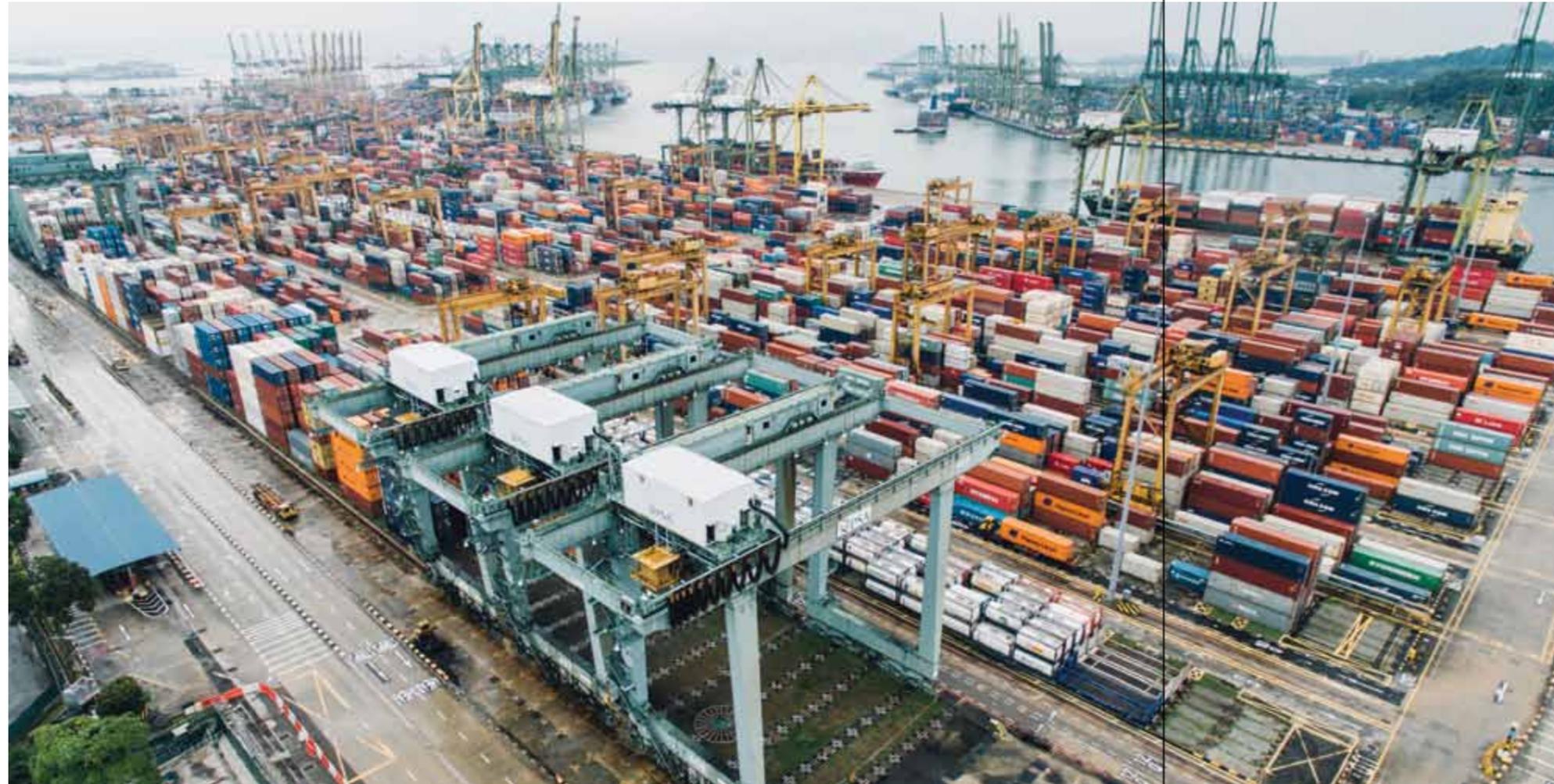
The main focus [for Yokohama] was to transform the character of the area between the two city centres away from piers and shipyards, with excellent city design.

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3 Yokohama, Japan. The city aims to use urban design to transform the character of its port area away from piers and shipyards.

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4 Singapore is moving its port to the western part of the island, where it will have double the current capacity. It will also harness the latest technologies to manage incoming vessels even better, and aims to be more community-oriented.

5 Cargo ships anchored off the coast of Singapore. The maritime sector contributes about 7% to Singapore's GDP, and provides employment to about 270,000 people.

To garner community support, you do really need to put a bit more heart-and-soul thinking into how you can build a port that can also be very much embedded with the community.

SINGAPORE: A COMMUNITY-ORIENTED NEXT-GENERATION PORT

Singapore has always been a trading post. We've continued to play that role as a place where you see the exchange of goods and services, the exchange of people, as a meeting place for new ideas and innovation. We started off as a small trading post, until the founding of modern Singapore by Sir Thomas Stamford Raffles, but actually our history goes way back to the 14th century. Our fortune has waxed and waned, but over time we have continued to maintain this role.

The question we have to ask ourselves is: how have we maintained this role throughout the centuries? This remains as relevant a question today as it was in the past. If you look at maritime Singapore today, we are not only a shipping hub port. We are still the second largest port by container volume at 30.9 million TEU as of 2015. We're still the world's largest transshipment hub and bunkering port.

But beyond that, we have also now developed into an international maritime centre. We have more than 5,000 maritime companies based in Singapore. We have companies that are into maritime finance, classification societies, protection and indemnity insurance clubs, brokers, agents and more than 130 shipping groups. You probably won't find such a high concentration of shipping groups in any other part of the world. And that's a phenomenon that has arisen over the last 10 years through our efforts to build on our global hub port, to track and establish these companies in Singapore to serve the wider needs across the region and beyond.

The port's expansion is finite. But the rest of the maritime cluster doesn't encounter that same sort of limit. It's at once virtual and physical. The services around ports, value-added activities, and international networks—that's the part we need to build on for future growth.

Today, the maritime sector contributes some 7% to Singapore's GDP, and provides employment to 270,000 people. The port's city terminals—Keppel, Brani, Tanjong Pagar—will be moved to the western

part of the island, where we'll be building a port that will consolidate our city terminals, double the current capacity, and allow us to handle up to 65 million TEU.

We will have a smart and intelligent port where we will harness the latest technologies to manage vessels coming in even better. We have over a thousand vessels in our port at any one time. This shows how busy it is. Going forward, we expect it to become even busier. For example, we will use data analytics for the detection of hotspots and anomalous activities in our new vessel traffic management centre and integrated command and control centre. To improve efficiency, we are looking to reduce the number of touchpoints for vessels coming into our port through our Maritime Single Window. We'll be among the few ports anywhere using automated guided vehicles for a large transshipment hub. We are also harnessing drones for inspections and preventative maintenance. The new port will also be able to handle larger vessels, including the current mega vessels, and even if they grow a bit larger. Because land is so scarce in Singapore, we'll have to look at how to optimise land use when we move the port to Tuas. We're exploring the use of underground space for storage of oil and water, and for warehousing. Above ground, there are opportunities to create so-called "new land" where we can have mixed-use developments, as well as clustering of logistics and maritime-related businesses along with port-centric activities.

The next-generation port will also be clean and community-oriented. We can incorporate more green features

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and comfy spaces, and bring more of these activities as near to the port as possible, as part of the wider development of the port region.

To garner community support, you do really need to put a bit more heart-and-soul thinking into how you can build a port that can also be very much embedded with the community.

Having worked at the National Environment Agency, of course I have to make sure that the port is also built to meet the highest environmental standards that are possible. Whether it's better air or water quality, these are important considerations, especially when the public begins to value these aspects more. We also want to leverage renewable, clean energy for the port, including harnessing solar energy and getting ready for LNG (liquefied natural gas) bunker vessels.

The government has plans to transform the western region into a more liveable and sustainable part of Singapore. We have to factor these ideas into our plans, to see how the port can be an iconic part of this western region transformation. We can also draw ideas from other ports like Rotterdam, Osaka and Los Angeles to bring community activities closer to the port—very liveable elements, waterfront walkways, viewing decks, even beaches. This will be our effort towards a liveable, sustainable Singapore. ■

ANDREW TAN  
Chief Executive, Maritime and  
Port Authority of Singapore

# NEW YORK CITY'S LESSONS FOR MAKING GREAT PUBLIC SPACES



HOW POLITICS,  
FINANCE AND DESIGN  
CREATED NEW YORK  
CITY'S HIGH LINE

Cities succeed when they manage to bring politics, finance and design into alignment. I'm going to show you one of New York City's great city planning successes: the High Line Park. Today it is the world's most popular park per sq m, but it was built almost 100 years ago not as a park, but as a wonderful feat of transportation infrastructure—a four-track freight railroad raised seven metres into the air—so that manufacturing products could glide over the crowded city streets of Manhattan and directly into the shop floors of the giant factories above. This worked brilliantly for a generation, until manufacturing left Manhattan in search of lower wages and larger spaces elsewhere. The last time a freight train used the High Line was in 1982 to deliver a load of frozen

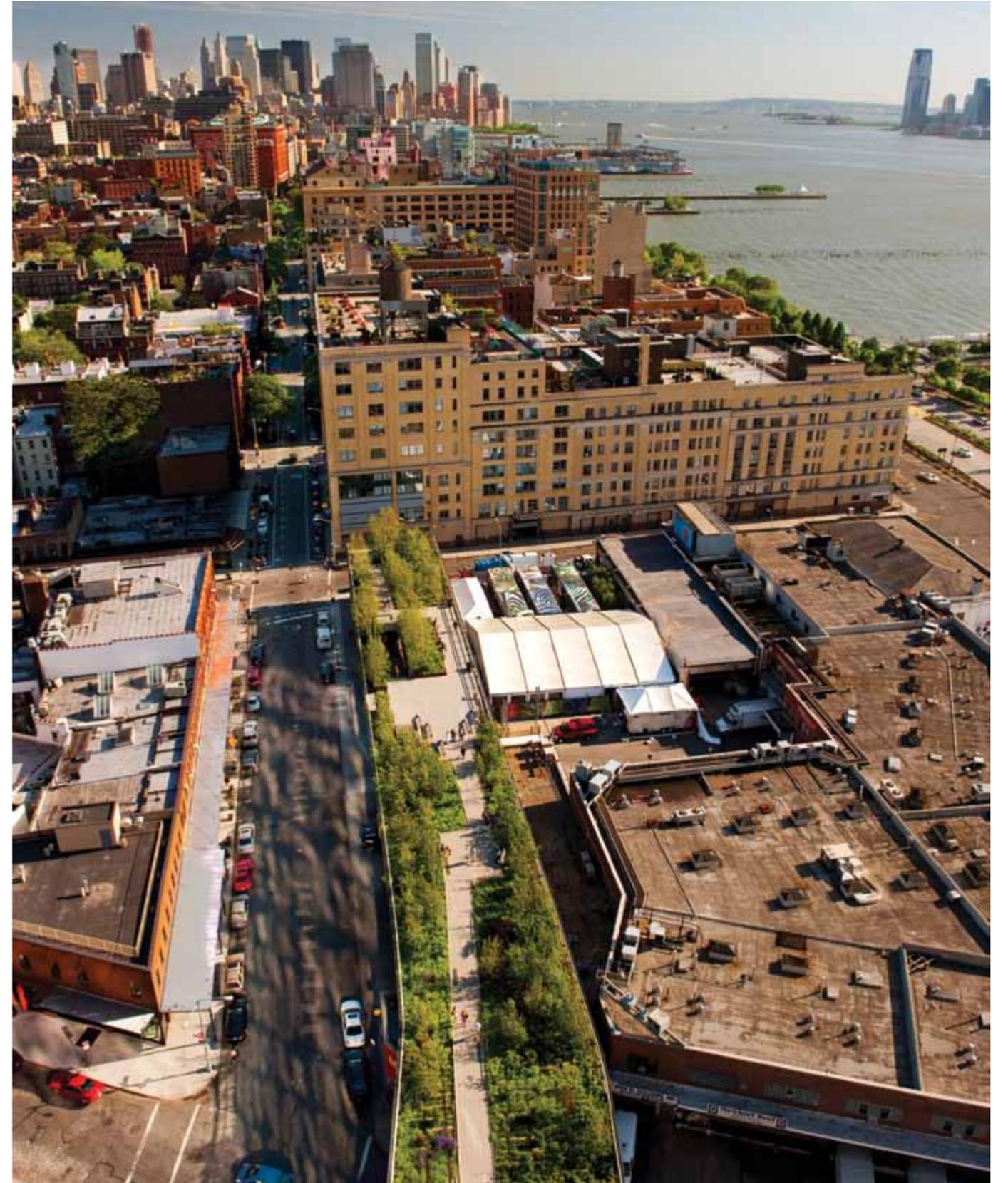
turkeys to a meat processing factory. After that, the mighty steel structure of the High Line was abandoned and just went to seed. Nature invaded it. Trees took root. Birds came to nest.

In the 1990s, a group of very smart speculators realised that the cheap land underneath the structure had value. This group formed an organisation and lobbied then-Mayor Rudy Guiliani to tear the High Line down. He agreed, but the planning process first required a public hearing. There, two guys from the neighbourhood, Josh David and Rob Hammond, met and said, "This isn't a good idea to tear it down. We don't know what we want to do with this thing, but let's give it another shot." They formed Friends of the High Line to see how this strange piece of infrastructure could be reused. They got a photographer, Joel Sternfeld, to photograph it over a year. Those photographs were

printed in *The New Yorker* and became a sensation.

Suddenly, the public was demanding that this not be torn down, and the Friends of the High Line had some momentum. When Michael Bloomberg became Mayor, he rescinded the demolition order and made one of the Friends of the High Line, Amanda Burden, Chair of the Department of City Planning. She directed the division to figure out a way to save the High Line. They very quickly told her that if you must save the High Line, you're going to have to capture the value needed to improve it through the development of the surrounding area. This led to the West Chelsea Special District, which transformed the High Line into a unique linear park, while redeveloping the surrounding former manufacturing area into a mixed use area that combined arts, retail, offices, hotels and affordable housing,

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I can't tell you how many cities came in to see us, asking how to create a High Line in their city. It's not the form that matters. It's the way the politics, finance and design were brought together. It's the way a special district was created around the asset, and the asset improved the area around it, so that private money ended up doing public good.

especially to address New York City's huge housing deficit. The first step was the zoning change from manufacturing to mixed-use. Adding residential at the edges, keeping the art galleries that had grown in the old factory spaces in the centre, and allowing the rest to blossom into a dynamic mix would create enormous value. But what about the speculators eyeing land under the High Line? A rezoning would increase land value and make them want to tear it down even more. Politics and money were not in alignment.

The answer came from the old hands at City Planning, who remembered the fight to save the historic Grand Central Station from being torn down and replaced with an office building a generation ago. The answer was a win-win solution—a transfer of development rights. In New York, there's a provision that allows you to treat a historic structure as a granting site. In exchange for not tearing it down, you're allowed to sell your development rights elsewhere. So, for the enemies of the High Line who had been wanting to tear it down to build five storeys of manufacturing in Manhattan at US\$200 per sq ft, suddenly, under the new plan, they could sell and transfer their development rights to build housing atop new skyscrapers at US\$2,000 a foot. Kaching! Ten times the value was being created. Within hours, minutes, of this law passing, lawyers were at the Land Office filling out forms. Amazing!

Politics and finance were now in line. What about design? We had to figure out how new buildings springing up around the High Line



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You can't have everything. The design of the sidewalk and the street requires a political decision: What's more important? What's less important? If you believe in sustainable transportation, you will think a bike lane is important. If you believe cars have an unfettered right, you will put in parking and vehicular lanes. That decision reflects the values of society.

- 1 An aerial view of the High Line, which stretches 2.33 km in Manhattan, New York City.
- 2 The last time a freight train used the High Line was in 1982, after which it was abandoned. Today, rejuvenated as a unique linear park, it is hailed as one of New York City's great planning successes.
- 3 Today, the High Line attracts almost five million visitors every year. The park has good views of the city and the Hudson River, and various arts and cultural activities are organised on it.

I encourage young designers to analyse what they do from a pedestrian point of view. To build a great city, build a great sidewalk. If you want to change things now, change it from the bottom-up.

would keep views, light and air in abundance for the new park. We had to figure out how new development would cradle the High Line: Does a building touch or not touch the High Line? What's the right building form? Because the High Line was saved and the legislation shaping the buildings was in, you could use as much of the plot ratio as possible onsite, and the rest you could sell to the top of another development. The result is great architecture and great public space—the Jean Nouvel building, the Neil Denari building and the High Line Park. It's a home run. Everybody wins. It's a model for urban design and development all over the world.

I can't tell you how many cities came in to see us, asking how to create a High Line in their city. It's not the form that matters. It's the way the politics, finance and design were brought together. It's the way a special district was created around the asset, and the asset improved the area around it, so that private money ended up doing public good.

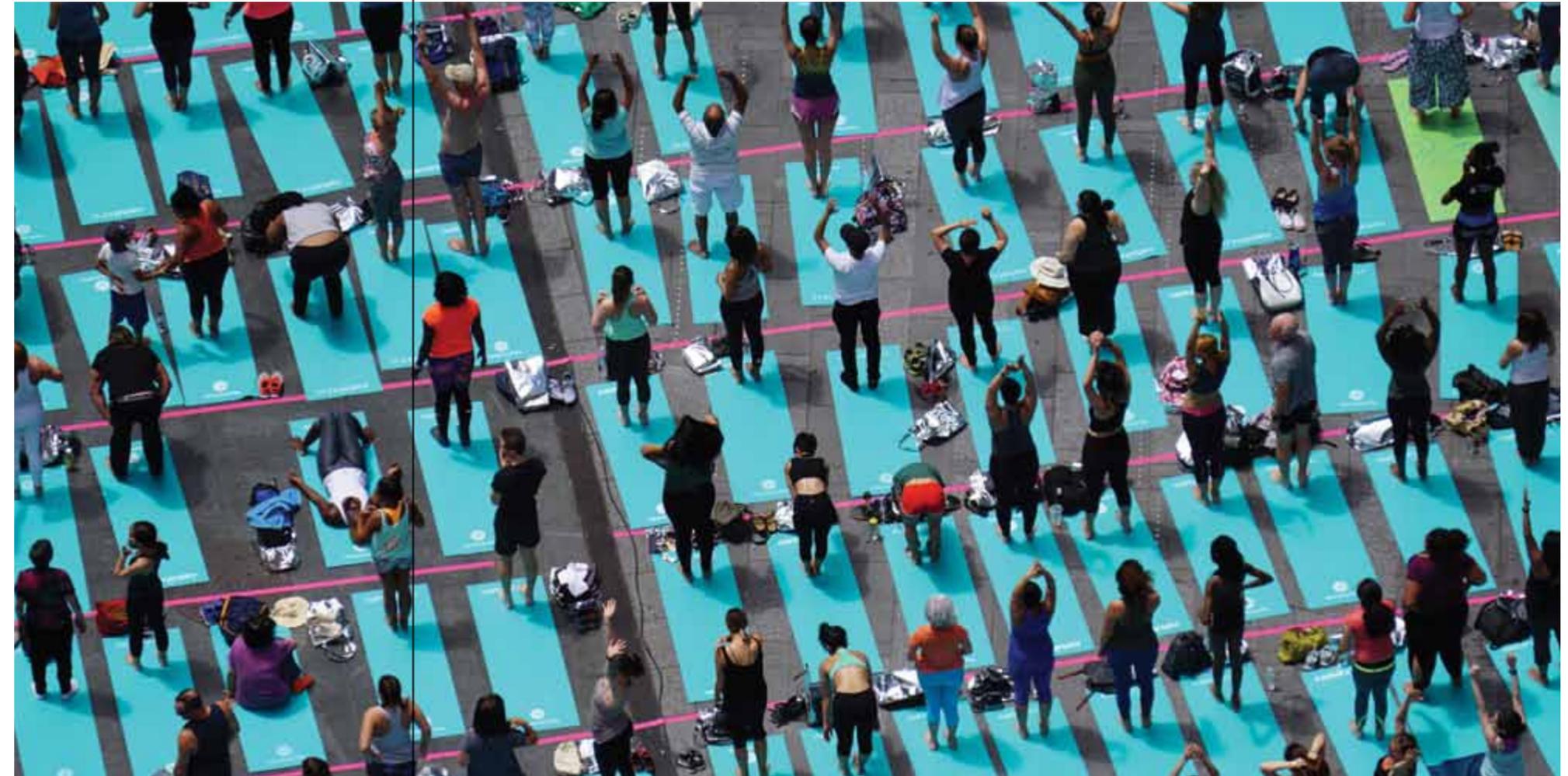
The leverage ratio is phenomenal. For US\$100 million of public money spent on actually improving the High

Line, US\$3 billion was spent by the private sector. If you include Hudson Yards, that figure goes up to US\$10 billion. For the special district, that's a 30-to-1 ratio, a higher leverage than what the financial services firm Lehman Brothers achieved at the height of the financial crisis.

HOW THE NEW TIMES SQUARE KEEPS STREET LIFE VITAL

Another success is Times Square. A piece of Broadway running through Times Square was turned into a pedestrianised plaza, what we call Bow-tie Plaza. It's a very tricky major intersection, one of New York City's top five, and if you asked the transport department to close it down, the answer would likely be "no".

The person who achieved this is Janette Sadik-Khan, our very dynamic transport commissioner. When she was being interviewed for the job by Mayor Bloomberg, he asked her: "Why do you want to become traffic commissioner?" She said, "I don't want to be *traffic* commissioner. I want to be transport commissioner. I want to think about how to get people from one place to another. Not just



cars." Bloomberg is a fantastic manager. He backed her although the opposition was immense.

How did the transformation happen? It came down to a couple of lines in the administrative law. The transport commissioner is allowed to restripe lanes at her discretion, administratively, without further approval, because striping is not a capital project, which would have gone through a two-year procedure and probably would have been killed.

Instead, overnight, roads were

restriped and painted as a pedestrian plaza and the public flocked in. Just like the High Line, the people opposed to this change in the first place became its biggest proponents. The retail owners in Times Square thought pedestrianisation would kill sales because cars wouldn't go through. Instead, sales went up, so they became big supporters. Once they were supporters, the capital programme could proceed.

If you love your city, you change your city. You question what is

challenging you and overcome it. The vitality of street life—that's what we never give up, as New Yorkers. Just because a bomb goes off in Times Square, doesn't mean people don't go there. Everybody goes there. Everybody walks, and it's the walking that makes New York City unique. How many songs are there about the sidewalks and streets of New York? Frank Sinatra, Alicia Keys, Jay Z. In the rest of the world, pedestrian means "blah", but in New York City, pedestrian means fabulous. This did

- 4 A mass yoga session in Times Square, New York City. Successfully pedestrianising part of the iconic public space has revitalised the district's street life.
- 5 Begun as a short-term trial in 2009, the pedestrian plaza in Times Square, New York City, was made permanent after the number of visitors who visited Times Square on foot increased.



not happen by accident. It was a chief focus of City Planning under Burden. She put us to work drawing streets over and over again. The point is, there's a finite space between property lines. Public right of way is small, and you have to fit an enormous number of different functions—bike lanes, truck lanes, trees, benches and sidewalks.

You can't have everything. The design of the sidewalk and the street requires a political decision: what's more important? What's less important? If you believe in sustainable transportation, you will think a bike lane is important. If you believe cars have an unfettered right, you will put in parking and vehicular lanes. That decision reflects the values of society.

I'm very proud that New York City now has one of the world's greatest bicycle networks. This shows commitment. The city bike programme proves that our values are correct. It's something every city has to make a choice on.

PLAN EVERY CITY FROM A PEDESTRIAN'S VIEWPOINT

During the Bloomberg administration, we found people who had been in their municipal jobs for years, but somehow didn't realise how this all fit together—how designing a tree pit affected a pedestrian flow, a block, a neighbourhood, and improved a city. That's what urban design has the power to unlock, by showing how the smallest changes can work towards the largest goals.

In our analysis, we broke down the design of the sidewalk experience into four planes just like an architect would design the planes of a room,

except these were outdoor rooms with the sky, ground, shop and road planes. Under each one, we listed streetscape elements: trees, lights, facades, benches, sidewalks, flooring, and traced those elements to the agencies regulating them. Regulations come in four flavours: regulations that allow you to do something, encourage you to do something, require you to do something, and those regulations that impede you and must be removed.

Each regulation should have some relationship to a policy goal. We traced all these through, and came up with a manual for active sidewalk design. Anyone who follows through on this workplan learns that these elements are tied to larger policies, and are regulated by different agencies. Once you understand the system, as an urban designer, you feel empowered to be able to work things, and understand how you're going to change things.

I encourage young designers to analyse what they do from a pedestrian point of view. To build a great city, build a great sidewalk.

If you want to change things now, change it from the bottom-up.

We have new tools now, new powers, so a bottom-up approach can be quite powerful. As Josh and Rob proved with the High Line, your community plan could just possibly change the world. ■

ALEXANDROS WASHBURN  
CEO of DRAW Brooklyn LLC  
Former Chief Urban Designer,  
New York City, New York, USA

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1 DR ISHER JUDGE AHLUWALIA  
Chairperson, Board of Governors,  
Indian Council for Research on  
International Economic Relations  
(ICRIER), New Delhi, India

Prior to her current position, Dr Isher served as Director and Chief Executive of ICRIER from 1997 to 2001. She is an economist and policy adviser with wide experience in economic growth, productivity, and urban planning and development. In 2008, she was appointed Chairperson of the Expert Committee on Urban Infrastructure and Services by the Ministry of Urban Development and Ministry of Housing and Urban Poverty Alleviation. She is the author, co-author and editor of several books, including *India's Economic Reforms and Development: Essays for Manmohan Singh*. She co-edited a volume on *Urbanisation in India: Challenges, Opportunities and the Way Forward*, with Prof Ravi Kanbur of Cornell University and Dr P K Mohanty, former Secretary of Housing.

2 DR EMI KIYOTA  
Founder and President  
of Ibasho, USA

Dr Kiyota is an environmental gerontologist and organisational culture change expert, focusing on initiatives to improve the quality of the built environment for long-term care and ageing services. She is a consultant to numerous age-friendly design projects for senior housing, hospitals and clinical-care centres in the US, Europe, Asia and Africa. To help meet the needs of the elderly in the developing world, she and a group of like-minded colleagues created a non-profit international organisation, Ibasho, which embodies the Japanese concept of "a place where one feels at home being oneself". She was awarded the Bellagio Fellowship from the Rockefeller Foundation for a residency on an "innovative response to global ageing". She plans to further develop her idea on creating a process for community planning that embraces and engages the elderly for the benefit of all.

3 PROF JAN PETER BALKENENDE  
Chairman, International  
Advisory Board Rotterdam  
Former Prime Minister of  
The Netherlands

Prof Balkenende has been a partner at Ernst & Young since 2011, focusing on corporate responsibility, international affairs and areas at the interface of the public and private sectors. He is chairman of the Dutch Sustainable Growth Coalition and has been Professor of Governance, Institutions and Internationalisation at Erasmus University, Rotterdam since 2010. He served as Prime Minister of The Netherlands from July 2002 to October 2010.

4 LEN BROWN  
Former Mayor of Auckland,  
New Zealand

Len Brown was elected Mayor of Auckland in 2010 and was re-elected in 2013. His vision was for Auckland to be the world's most liveable city, by committing to four top priorities: Improving Auckland's transport network; quality compact urban design and more affordable housing; improving Auckland's economic performance; and building an inclusive culture in a city of 1.6 million people and 210 ethnicities. Under his leadership, Auckland (1) developed a 30-year blueprint for the growth and development of the region; (2) launched an Economic Development Strategy; and (3) improved its standing on all three major international quality of life surveys, placing in the top 10 of the Economist Intelligence Unit's *Global Liveability Report*, *Monocle* magazine's Most Liveable Cities Index and the Mercer Quality of Living Survey.

5 DR CHUA SIAN ENG  
Former Commissioner,  
Parks and Recreation  
Department, Singapore

Dr Chua was Commissioner of Parks and Recreation from 1983 to 1995. He was also on the Board of Singapore Labour Foundation Leisure Enterprise (SLFLE), involved in the development of the Orchid Country Club. With this development and for his contribution to the Garden City campaign, he was awarded the Public Administration Medal (Silver), Friend of Labour Award and the National Trades Union Congress Meritorious Service Award.

6 PROF JAN GEHL  
Professor Emeritus of  
Urban Design, Royal Danish  
Academy of Fine Arts  
Founder & Senior Advisor,  
Gehl Architects, Denmark

In 1966, Prof Gehl received a five-year research grant from the School of Architecture at the Royal Danish Academy of Fine Arts to study the form and use of public space. This work spawned his first book, *Life Between Buildings*. His research on public spaces and public life began in Copenhagen, but was quickly applied to many other cities in Europe, North America, Asia and Australia. His ideas and approach towards designing for public spaces incorporate the cutting-edge of technology without losing sight of what best supports and enhances people's experience of everyday life in the public realm. As a founding partner of Gehl Architects, Prof Gehl has served as a consultant to city councils and city planning departments across Europe, North America, Australia, Japan and Singapore. He is an honorary fellow of the Architects Institutes in Denmark, England, Scotland, USA and Canada. He has been awarded the "Sir Patrick Abercrombie Prize for exemplary contributions to Town Planning" by The International Union of Architects, as well as honorary doctor degrees from universities in Edinburgh, Halifax, Varna and Toronto.



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DR JANE GOODALL, DBE  
 Founder, Jane Goodall Institute  
 UN Messenger of Peace

British ethologist Dr Goodall is a highly respected member of the world scientific community and a staunch advocate of ecological preservation, who created one of the most trailblazing studies of primates in modern times. Born in London, England, she set out to Gombe in Western Tanzania to study wild chimpanzees without the benefit of a college degree, and made discoveries about primate behaviour that have continued to shape scientific discourse. From 1970-1975, she held a visiting professorship in psychiatry at Stanford University. In 1973, she was appointed honorary visiting professor of zoology at the University of Dar es Salaam in Tanzania, a position she still holds. She has received international recognition and numerous awards such as the National Geographic Society's Hubbard Medal, Japan's Kyoto prize, and the Benjamin Franklin Medal in life science. She is also a United Nations' Messenger of Peace.

PROF ERIC KLINENBERG  
 Professor of Sociology and  
 Director, Institute for  
 Public Knowledge New York  
 University, USA

Prof Klinenberg is the Research Director for the Rebuild by Design competition, a federal project that provided nearly US\$1 billion for innovative solutions to climate vulnerabilities in the New York metropolitan region. He is the author of several acclaimed books: *Heat Wave*, *Fighting for Air*, and *Going Solo*, and he has contributed to *The New Yorker*, *Rolling Stone*, and *This American Life*. His 2015 book, *Modern Romance*, is a unique blend of social science and comedy, co-authored with Aziz Ansari. His latest book is *Palaces for the People: How Social Infrastructure Can Help Fight Inequality, Polarization, and the Decline of Civic Life*.

DR LIMIN HEE  
 Director of Research,  
 Centre for Liveable Cities

At CLC, Dr Hee oversees research strategies, initiatives and collaborations. She has helped to oversee the Urban Systems Studies series, which delves deep into the transformation of Singapore over the past 50 years. She is the project leader for collaborative research projects, including those with the Urban Land Institute, "Creating Healthy Cities through Active Mobility", and "10 Principles for Liveable High Density Cities", as well as the multi-agency collaborations on "Re-Imagining Tampines". Prior to joining CLC, she taught at the School of Design and Environment at the National University of Singapore, where she was a Principal Investigator at the Centre for Sustainable Asian Cities, as well as being jointly appointed at the Asia Research Institute. Her research is focused on sustainability and its agenda for architecture, urbanism and public space. She has published widely on cities, including her books *Future Asian Space* and *Constructing Singapore Public Space*.

LI JIANGE  
 Vice-Chairman, Central  
 Huijin Investment Co., Ltd  
 Chairman, Board of Trustees,  
 Sun Yefang Foundation  
 Co-Head, Tsinghua University  
 National Institute of Financial  
 Research, China

Li has held several high-level posts in various organisations, including Chairman, ShenYin & WanGuo Securities Co. Ltd; Chairman, China International Capital Corporation Limited; Vice President (Vice Minister level), Development Research Center of the State Council; Vice Minister, State Council Office for Restructuring the Economic System; Vice Chairman and Executive Vice Chairman, China Securities Regulatory Commission; and Chief of Staff, Securities Commission of the State Council.

TOSHIHIDE HIRAHARA  
 Deputy Mayor, Yokohama, Japan

Hirahara joined the Yokohama city government as a civil engineer in 1981, serving in social infrastructure development projects on rivers, sewers, waste processing and urban redevelopment. After being closely involved in Yokohama's hosting of the 2002 FIFA World Cup TM final, he worked in the city planning and urban development sectors to develop Yokohama's central and suburban areas. He has contributed particularly to the city's development by focusing on producing value through economic stimulation, environmental consideration, disaster prevention, regional partnership, and creation of art and culture. As one of the key players in Yokohama's development, he was integral to its receiving special mention in the 2014 Lee Kuan Yew World City Prize for its long-term vision to revitalise the central waterfront area. As Director General of the Urban Development Bureau, he was awarded the Ishikawa Prize for contributing to city planning progress and development through creative and awareness-raising activities organised by Yokohama Citizen's Community Building Project and the City Planning Institute of Japan. He continues to develop and maintain the city's social infrastructure by pursuing sustainable development and promoting FutureCity and Smart City initiatives.

DR SHAWN LUM  
 President,  
 Nature Society Singapore

Dr Lum is a Senior Lecturer at the National Institute of Education, Nanyang Technological University, where he teaches plant diversity and ecology to future science teachers. His work as a researcher and educator have led to his attempts to involve schools and community groups in the documentation, study, protection and celebration of the natural history of Singapore and the region.



13 CARRIE LAM  
Chief Executive, Hong Kong  
Special Administrative Region  
Former Secretary for Development,  
Hong Kong

Lam has been the Chief Executive of the Hong Kong Special Administrative Region (HKSAR) since July 2017, the first woman to hold this highest position. Before becoming the Chief Executive, she has served Hong Kong in various government positions for more than 37 years, including the posts of the Chief Secretary for Administration from 2012 to 2017 and the Secretary for Development from 2007 to 2012. In her five-year tenure as Secretary for Development, she pressed ahead with various initiatives in pursuit of diversified, balanced and sustainable development. These initiatives included a new heritage conservation policy with the Revitalising Historic Buildings Through Partnership Scheme and Conserving Central being two of the highlights. In recognition of her achievements as Secretary for Development, she has been awarded Honorary Member of the Hong Kong Institute of Landscape Architects, Honorary Fellow of the Hong Kong Institution of Engineers, Property Person of the Year in the RICS Hong Kong Property Awards 2012, Honorary Member of the Hong Kong Institute of Architects, Honorary Member of the Royal Institution of Chartered Surveyors, Honorary Fellow Member of the Hong Kong Institute of Architectural Conservationists, and Honorary Fellow of the Institution of Civil Engineers.

14 PAMELIA LEE  
Senior Tourism Consultant  
Lee contributed 35 years to the Singapore Tourism Board (STB), helming various senior positions and achieving numerous outstanding awards and recognition for her work in heritage conservation, urban development, tourism and environmental protection. She also served on the Boards of the Urban Redevelopment Authority and National Heritage Board.

15 LIM NEO CHIAN  
Chairman, Agri-food &  
Veterinary Authority, Singapore  
Former Deputy Chairman and  
Chief Executive, Singapore  
Tourism Board

During his tenure, Lim led the changes in Singapore's tourism scene, including the Formula 1 race and Integrated Resorts. Previously Chairman and CEO of JTC Corp and CEO of China-Singapore Suzhou Industrial Park Development Co. Ltd, he continues to serve as Chairman on various boards including Ascendas Hospitality Trust, and as Board Member of Gardens by the Bay and Singapore Cruise Centre Pte Ltd.

16 LOH LIK PENG  
Hotelier and restaurateur  
Owner of refurbished hotels including Hotel 1929 and New Majestic Hotel, Loh was named "Tourism Entrepreneur of the Year" at the Singapore Experience Awards 2011. He is a member of Singapore Tourism Board's Tourism Consultative Council and Board Member at the National Heritage Board.

17 ASSOC PROF GOPINATH MENON  
Member, Public Transport  
Council, Singapore  
Former Chief Transportation  
Engineer, Land Transport  
Authority, Singapore

Assoc Prof Menon had his public service career with the Public Works Department and the Land Transport Authority (LTA), being the Chief Transportation Engineer from 1991 to 2001. He has been involved in all major traffic management schemes since the 1970s, including the Area Licensing Scheme, Intelligent Transport System, Electronic Road Pricing, bus priority and road safety engineering. He has been an Adjunct Associate Professor with Nanyang Technological University since 1991. He is Vice-Chairman of the Singapore Road Safety Council and a board member of the Public Transport Council. He is a Principal Consultant with CPG Consultants, Singapore.

18 SIR EDWARD LISTER  
Chairman, Homes England  
Former Chief of Staff and  
Deputy Mayor for Planning,  
Greater London Authority

During his tenure, Sir Edward advised the Mayor of London on strategic planning applications and had oversight of the London Plan and Community Infrastructure Levy. As the Mayor's Chief of Staff, he led the Greater London Authority's (GLA) budgets and administration, and oversaw operations in City Hall. Prior to that, he served as leader of Wandsworth Council from 1992 to 2011. As the longest-serving council leader in the country, he made Wandsworth the most successful value-for-money local authority with the country's lowest council tax charge and top satisfaction ratings from residents.

19 DR LIU THAI KER  
Founding Chairman,  
Centre for Liveable Cities  
Chairman,  
Morrow Architects & Planners

As architect-planner and later CEO of the Housing & Development Board (HDB) between 1969 and 1989, Dr Liu created two dozen new towns, each with a population of about 200,000 residents, and oversaw the implementation of more than half a million dwelling units. As Chief Planner and CEO of the Urban Redevelopment Authority (URA) from 1989 to 1992, he spearheaded the major revision of the Singapore Concept Plan, consolidation of conservation policies and practice, as well as streamlining of planning application guidelines and procedures. Internationally, he has been planning advisor to some two dozen cities in China.

20 SANTIAGO CASTRO-GOMEZ  
President, Banker's Association  
of Colombia

Castro-Gomez was a former Director General of the Colombian Civil Aviation Authority. He was also a Colombian Congressman elected for four consecutive four-year terms between 1994 and 2010, and a Member of the State Congress of Valle de Cauca and Councilman of the city of Cali.

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21 POON HONG YUEN  
Former CEO, SPRING Singapore  
Former CEO, National Parks  
Board, Singapore

Poon has held various appointments across the Public Service, including as CEO, SPRING Singapore, and at the Ministry of Finance, Ministry of Trade and Industry, Economic Development Board, Infocomm Development Authority, and the National Parks Board.

24 DR KIM SOO-HYUN  
President, Seoul Institute,  
South Korea

Dr Kim heads the Seoul Institute, a think-tank established and sponsored by the Seoul Metropolitan Government. He has served as chairman of the Seoul Policy Advisory Committee, Vice Minister of Environment, and Secretary to the President for Social Policy, National Economy and Social Inclusion. He has written several books in Korean, such as *Principles And Issues Of Housing Policy*, *Real Property In Danger*, *Real Property Is Over*, and *Urban Policy In Low Growth Era*. His research interests span Seoul's urban issues, including housing, regeneration, poverty and social inclusion.

26 DR TAN CHIN NAM  
Senior Corporate Adviser  
in various companies  
Former Permanent Secretary,  
Ministry of Information,  
Communications and the Arts,  
Singapore

Dr Tan distinguished himself in diverse leadership positions, including Chief Executive, Singapore Tourism Board, and Managing Director, Economic Development Board. He was named Tourism Personality of the Year 1996 by Pacific Asia Travel Association and Travel Trade Gazette (TTG) for his role in leading the Singapore Tourism Board and Tourism21 Masterplan.

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22 PROF PAUL ROMER  
Professor of Economics,  
Stern School of Business, USA  
Founding Director, NYU  
Stern Urbanization Project,  
New York University, USA  
Former Chief Economist,  
World Bank

Prof Romer received the Recktenwald Prize in 2002 for his seminal theoretical work on ideas as the drivers of economic growth. While teaching at Stanford University's Graduate School of Business, he took an entrepreneurial detour to start Aplya, an education technology company dedicated to increasing student effort and engagement. He also founded Charter Cities, a non-profit research organisation focused on the interplay of rules, urbanisation and development. In 2010, *Harvard Business Review* selected Charter Cities as one of its 10 Breakthrough Ideas, and *Foreign Policy* selected Prof Romer as one of its Top 100 Global Thinkers.

25 ANDREW TAN  
Chief Executive, Maritime and  
Port Authority of Singapore

Tan has been CEO of the Maritime and Port Authority of Singapore (MPA) since 2014. MPA is responsible for regulating, developing and promoting Singapore as a premier global hub port and an international maritime centre, and for advancing and safeguarding Singapore's strategic maritime interests. He has also worked in various government agencies, including the Ministry of Information and the Arts, Ministry of Defence, Ministry of Foreign Affairs, Prime Minister's Office, Ministry of the Environment and Water Resources, and Ministry of Transport. He was also CEO of the National Environment Agency from 2009 to 2013 and Founding Director, Centre for Liveable Cities, from 2008 to 2010, where he remains a Fellow.

27 TAN GEE PAW  
Former Chairman, PUB, Singapore  
Former Permanent Secretary,  
Ministry of the Environment,  
Singapore

Tan was Chairman of PUB, Singapore's national water agency, from 2001 to 2017. He was Permanent Secretary, Ministry of the Environment, between 1995 and 2001. In 1978, he received the Public Administration Medal (Silver), and in 2001, the Meritorious Service Medal. He also received a Special Award (Gold Medal) for Clean River Commemoration in 1987. He received the Medal of Commendation at the NTUC May Day Awards in 2005, the President's Award for the Environment in 2007, and the Distinguished Service Order at the 2010 National Day Awards.

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23 PROF SASKIA SASSEN  
Robert S. Lynd Professor  
of Sociology, Columbia  
University, USA

Prof Sassen is a member of the Committee on Global Thought at Columbia University, which she chaired from 2009 to 2015. She is the author of several books, including *The Global City*; *Territory, Authority, Rights: From Medieval To Global Assemblages* and *A Sociology Of Globalization*. She wrote a lead essay in the 2006 Venice Biennale of Architecture catalogue.

28 BART DE WEVER  
Mayor, Antwerp, Belgium

De Wever is the Mayor of the largest city in Flanders, Belgium. He has been general chairman of the New Flemish Alliance since 2004 and served as a representative in several of the country's parliaments. He attended the Katholieke Universiteit Leuven, graduated with a Master's Degree in History and worked as an assistant at the University of Leuven. His Latin expressions are a trademark. For example, "nil volentibus arduum": ("Nothing is impossible for the willing") also subtly refers to his party's name.

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29 PROF MARILYN JORDAN TAYLOR  
Professor of Architecture and Urban Design and former Dean, School of Design, University of Pennsylvania, USA  
Prof Taylor is recognised worldwide as an architect and leader in urban design, transportation and resilience building, as well as a pioneering architect who was partner and chairman of Skidmore, Owings & Merrill, and Global Chairman of the Urban Land Institute. She has worked for nearly four decades on projects in Singapore, including the first MRT subway line, Changi Airport Terminal 3, the Marina Bay Master Plan 2003, and the National University of Singapore's Master Plan for College Town. Her practice and research focus on the dynamic relationship between transportation infrastructure and urban development.

30 ALEXANDROS WASHBURN  
CEO of DRAW Brooklyn LLC  
Former Chief Urban Designer, New York City, New York, USA  
Washburn is an urban designer who believes in developing local character and resilience. He is the author of *The Nature Of Urban Design: A New York Perspective On Resilience* and was Industry Professor of Design at the Stevens Institute of Technology, where he founded the programme in Coastal Resilience and Urban Excellence. His career combines in equal parts politics, finance and design, the three forces that must be aligned to change a city for the better. His previous roles include Public Works Advisor to US Senator Daniel Patrick Moynihan, founding President of the Pennsylvania Station Redevelopment Corporation, and editor of the Casebook in Real Estate Finance and Development. He is an architecture graduate of the Harvard Graduate School of Design and the winner of the New York Public Architect award.

31 DR GEOFFREY WEST  
Distinguished Professor and Past President, Santa Fe Institute, USA  
Associate Fellow, Green-Templeton College, Oxford University, United Kingdom  
Visiting Professor, Nanyang Technical University, Singapore  
Dr West is a theoretical physicist whose primary interests have related to fundamental questions in physics, especially concerning elementary particles, their interactions and cosmological implications. He served as Santa Fe Institute President from 2005 to 2009. Before joining SFI in 2003, he was the leader and founder of the high-energy physics group at Los Alamos National Laboratory. His recent awards include *Time* magazine's 2006 List of 100 and the APS Szilard Award (2013).

32 JOSEPH YEE  
Former Director of Planning and Transportation, Land Transport Authority, Singapore  
Yee was involved in transportation planning, traffic engineering work and projects in various government positions in Singapore for more than 35 years. He served as Director of Planning and Transportation with the Land Transport Authority (LTA) from 1999 to 2003. He was involved in developing Singapore's Concept Plan, Area Licensing Scheme, Intelligent Transport System, and Electronic Road Pricing, among other projects. He retired in 2003, and has been Advisor and Consultant to the LTA since 2010. He is a Principal Consultant with CPG Consultants, Singapore, and has handled transportation planning and traffic engineering projects in the United Arab Emirates, China, India, Vietnam, Malaysia and Singapore.

33 MOHINDER SINGH  
Head, Transport Planning, MSI Global Pte Ltd  
Advisor & Former Dean, LTA Academy, Singapore  
Singh was Director of Planning at the Land Transport Authority (LTA) from 1996 to 2007 and Dean of the LTA Academy from 2007 to 2014. Prior to this, he was with the Public Works Department and Ministry of National Development in various portfolios. He has been involved in Singapore's land transport development since 1977, and oversaw the planning of transport infrastructure and many road and Mass Rapid Transit (MRT) projects.

34 PHILIP YEO  
Chairman, Economic Development Innovations Singapore  
Former Chairman, SPRING Singapore  
Former Chairman, Economic Development Board, Singapore  
Former Chairman, Agency for Science, Technology and Research, Singapore  
Formerly Chairman of SPRING Singapore, Yeo guided the government enterprise development agency with the mission of enabling and growing local enterprises, focusing on small and medium enterprises. He served on the United Nations Committee of Experts in Public Administration, established by the Economic and Social Council for the promotion and development of public administration and governance among member states, in connection with the United Nations Development Agenda. He received the 1st BioSpectrum Asia-Pacific Lifetime Achievement Award in 2009 for his efforts in making Singapore one of the most exciting bioscience hubs through policy and fiscal measures and setting up world-class infrastructure. In 2011, he was conferred the honorary degree of Doctor of Letters by the National University of Singapore for his extraordinary dedication and immeasurable life's work bettering the lives of others.

# 10 YEARS 100 LECTURES



04-03-2009  
URBANISATION AND ITS IMPACT:  
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Dr Michael Braungart

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Tadatoshi Akiba

25-01-2011  
LANDSCAPE INTELLIGENCE  
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This book is about cities. It is also about homes. Today, more than half the world's population has made cities or urban areas their home—a figure that is expected to rise to nearly 70% by 2050. As a rapidly growing population migrates to cities in search of a better life, almost seven billion people will be jostling for space, food, jobs and services. The planning and governing of cities are among the greatest challenges of our time.



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