

DA

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URBAN LIFE





VELUX EDITORIAL

URBAN [LIFE]

The global population is expected to reach 10 billion by 2050. Seven of these ten billion are expected to live in cities – so we are adapting to become an urbanised species.

This will place demands on the city – and on people. It will require respect and cooperation, responsibility and the development of new technologies, new values, mental transformations, empowerment and enlightenment. And without sustainability, it cannot be done. Living sustainably is one of the greatest challenges that faced city dwellers in the past – and the present, and the future. Another, even greater challenge, then and now, is how to stay healthy.

When the VELUX Group was founded in 1942, there was a scarcity of space and materials, so attractive and affordable living space under the sloped roof of existing and developing buildings was created. These new spaces created better and healthier living conditions for people with the provision of daylight and fresh air. 70 years of development has led to the credo that the VELUX Group calls Sustainable Living, based on the concept that the quality of our lives and the quality of our environment are intrinsically interlinked. Sustainable Living aims to create buildings with a healthy indoor climate that also give more than they take in environmental terms.

D/A 17 takes the vision of sustainable living into the urban scale, and the overall theme is Urban Life – the development of better life and living conditions in the cities. It discusses how to harness the potential of the cities and turn them into healthy, safe and stimulating places for an ever-increasing number of us - and how to achieve this whilst radically reducing our ecological footprint, which encompasses much more than CO₂ emissions alone. Often this challenge is only discussed from macro-economic, macro-environmental and macro-social points of view. This issue of D/A takes a slightly different approach – by putting people, their cultures and values, their needs and aspirations, their health and well-being, first. The focus in the magazine will be on the symbiosis between people and cities. The aim is to convey a message of hope for a sustainable

future; to create a good life in cities with the basic things that really matter – clean air and water, sunlight and daylight, a safe home, harmony with the natural environment, and a feeling of local and global connectedness.

D/A 17 is divided into three sections. In the first, four authors open the debate on the potentials and challenges of contemporary cities; Richard Hobday, Hardin Tibbs, Charles Landry and Janice Perlman address the issues of urban health, the reconciliation of human culture with nature, the quest for a new 'civic urbanity', the housing crisis in the world's megacities, and the widening gap between urban elites and the urban poor. Many of the questions and arguments that the authors raise in their texts are taken up again in the third section of this magazine, where we present a discussion between Danish philosopher Ole Fogh Kirkeby and Danish climate expert Per Meilstrup.

The central part of this magazine was created together with artist Robert Polidori. Known for his masterful photographic explorations of deserted places like Chernobyl, or post-Katrina New Orleans, Polidori's task was to produce a portrait of people's living environment in three major cities of the world – London, Phoenix and Rio de Janeiro. We hope the panoramic images will provide a structured focus on eight unique aspects of urban life, in four clashes of contrast. Together with the accompanying statistics and graphics, we sought not only to focus on the obvious and well-known aspects of the cities, but also to reveal some of the hidden potential in their built structure. Such a complex topic cannot possibly be comprehensively covered in one magazine. So we will be delving deeper in D/A 18, due for publication in Autumn 2012.

Enjoy the read!

The VELUX Group

D/A

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IN SEARCH OF HEALTHY CITIES

Making cities healthier places for mankind to live in has been an ongoing endeavour since the first cities came into existence. In his article, Richard Hobday provides a brief synopsis of the history of this endeavour and discusses one of the great challenges that cities are going to face in this respect in the future – that of providing adequate amounts of sunlight to their citizens in order to keep them healthy.

THE EMERGENCE OF THE TRANSMODERN CITY

The future evolution of cities towards sustainability will be a result of global cultural change, writes Hardin Tibbs. As the values of modernity, with their belief in technology, growth and progress, increasingly give way to the more post-materialistic values of transmodernity, ecological concern and spiritual self-discovery will become increasingly important as 'drivers' of our urban culture.

CIVIC URBANITY

In this article, Charles Landry explains his concept of Civic Urbanity, an attitude towards our cities that aims to strengthen the links of city-dwellers to the local community and to the place that they live in. This concept requires commitment from everyone, as well as an open democratic discourse. If it succeeds, it will turn citizens from mere 'consumers' to 'co-creators' of future cities.

A CALL TO ACTION – OUR CITIES, OURSELVES

The megacities of the world will continue to grow in the next decades – and if we do not act soon, the divide between privileged elites and the urban poor will grow as well. In her article, Janice Perlman outlines five strategies to move forward in this respect: 1) non-reformist reforms; 2) transparency; 3) negotiated solidarity; 4) diversity and density; and 5) infrastructure leapfrogging.

THE URBAN POTENTIAL – LONDON, PHOENIX, RIO DE JANEIRO

What roles do light and darkness play in modern cities? How do cities organise their growth; how do they use their surfaces, volumes and open spaces? Where are the visible and invisible boundaries within a city? And what consequences does this all have for human quality of life? In a photographic essay by Robert Polidori, as well as selected facts and statistics, Daylight & Architecture portrays three major cities of the world and tries to answer these questions.

MAN AND THE CITY – POWER TO THE PEOPLE

Mankind is becoming an urbanised species. There are estimates that around 2050, 7 in 10 people worldwide will be living in cities. What challenges does this impose on society? What does it require in terms of mutual respect and solidarity, of new values, political empowerment and education? These questions are discussed in a conversation between the climate expert Per Meilstrup and the philosopher Ole Fogh Kirkeby.

The city panoramas in this issue of D/A were created by the artist Robert Polidori. They consist of up to 22 single photographs taken with a large-format camera. The photographs were stitched together to form a wide panorama on which we zoom in to highlight the clashes and contrasts inside the living environment of the three cities.



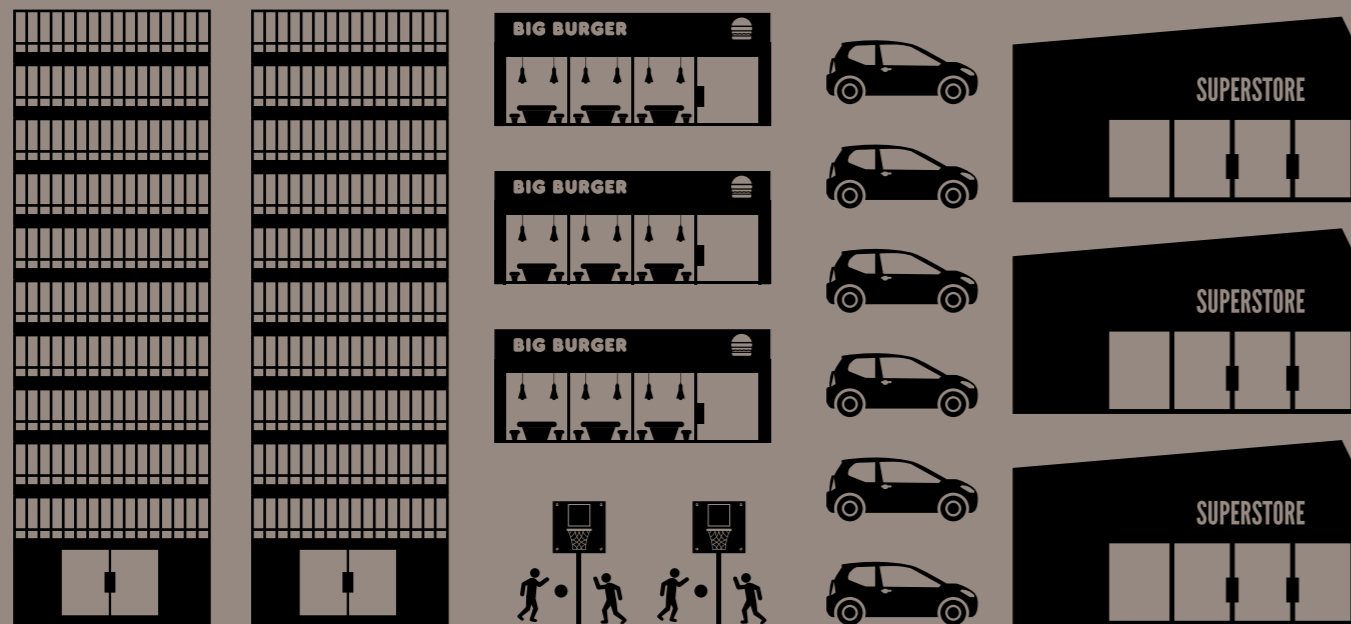
"Not only are we sedentary, but we have chosen a life that is increasingly lived indoors. A baby born in the United States will spend close to 87 per cent of his or her lifetime indoors and another 4 per cent in enclosed transit.

The reason? We have become experts at creating shelter with ever-increasing comfort. [...] In choosing to become an indoor species, we have cut ourselves off from the natural world, making us increasingly oblivious to what we are doing to our immediate outdoor surroundings."

Douglas Farr in: Sustainable Urbanism (2008)

IN SEARCH OF HEALTHY CITIES

By Richard Hobday
 Illustrations by Robert Samuel Hanson



People have been living in cities for thousands of years. Two of the biggest challenges that faced city dwellers in the past are still with us today. One is how to stay healthy; and the other is living sustainably. There is a long, if intermittent tradition of planning for both. Some projects were successful, others less so. But they all provide useful insights.

THE IDEA THAT the built environment can influence public health, for good or ill, is not new. Throughout history, some civilisations have recognised the importance of hygiene, sanitation, pure air and sunlight in preventing disease and promoting health. Others have not. Four thousand years ago, people in the north of India arranged their communities to keep themselves healthy. Sites excavated in the Indus Valley, and at Harappa in the Punjab, suggest ancient Indian cities were laid out for health. The streets were broad and paved, with covered sewers. Bathrooms and drains were common features of the buildings.¹ In the 4th century BC, the Greek doctor Hippocrates wrote about cities and health. He said the quality of the air and the properties of the water in a locality were decisive. Hippocrates also wrote about the orientation of cities with respect to the sun. He noted that cities with an easterly aspect – between the summer and winter risings of the

sun – had healthiest residents. They suffered fewer diseases than people in cities facing in other directions; and their illnesses were less severe.² The ancient Greeks planned for the sun. A century earlier, they had severe fuel shortages. Firewood was scarce. Archaeological evidence shows they responded to this crisis by planning cities to allow every homeowner access to sunlight to warm their houses.³

Thinking such as this informed the architecture of ancient China and Imperial Rome. China has a long history of building to the doctrine of ‘wind and water’, or Feng Shui. This philosophical approach to housing and planning includes specific instructions on how to design for health and well-being. Traditional Chinese courtyard or quadrangle houses embody many of the principles of Feng Shui.^{4,5} Some of the same features could be found in the best Roman villas: high levels of natural ventilation; plenty of light; and a radiant

underfloor heat source. Like the Chinese, the Romans adapted their buildings to the local climate. In colder regions, they oriented them to benefit from winter sun and to avoid summer overheating.

Often the site for a dwelling, or a public building, or a city, was carefully chosen for its health-giving properties. During the 1st century BC, Marcus Vitruvius Pollio, the Roman military engineer and architect, wrote that the careful siting and design of buildings, such as theatres and temples, prevented illness. Also, proper street planning could help the cure of chronic illness, such as tuberculosis.⁶ For Romans like Vitruvius, protecting the ordinary citizen and the army from disease was a priority. The Roman statesman Marcus Tullius Cicero famously wrote that ‘*Salus publica suprema lex*’, or the health of the people is the highest law.⁷ Presumably, this is why the Romans invested so heavily in aqueducts, piped water, sewerage, public baths and lavatories. The Romans do not seem to have built many hospitals, other than for their military. And they put public health in the hands of their engineers and architects, not doctors.

HOUSING AND HEALTH

In Europe, the practice of planning for health was largely abandoned from the Middle Ages until the early years of the 19th century. The very wealthy sometimes commissioned architects who had an understanding of the influence of locality, climate, ventilation, and daylight on health. But cities built to prevent disease were the exception. Medical thinking had changed. Personal and environmental

hygiene was less important than it had been. Eventually, the laying out of towns and buildings with due care for health re-emerged. This was in response to the squalor, disease and political unrest in the new towns and cities of the Industrial Revolution. Leading figures in the movement for sanitary reform, such as Florence Nightingale and Edwin Chadwick, advocated health promotion, rather than curative medicine. They campaigned for closed drainage and sewerage, clean water, garbage collection and public baths. They also called for improvements in housing and hospital design. Like Vitruvius, Florence Nightingale believed good design could shorten the course of diseases. In her *Notes on Nursing*, she identified five basic requirements for securing health in houses: pure air; pure water; efficient drainage; cleanliness; and light – especially sunlight.⁸ Her concept of public healthcare centred on housing rather than hospitals. In her view, good housing was a better investment than hospital construction:

*“...in all European countries, more sickness, poverty, mortality and crime is due to the state of our poor men’s dwellings than any other cause. And I would rather devote money to remedying this than any institution.”*⁹

Eventually, town planning and good housing were seen as key to improving public health. But there were competing ideas as to how to plan and build for this. Some social reformers saw Britain’s Garden Cities as the solution. Others rejected the gabled cottage style of Bournville Village and Port Sunlight for a more functional,

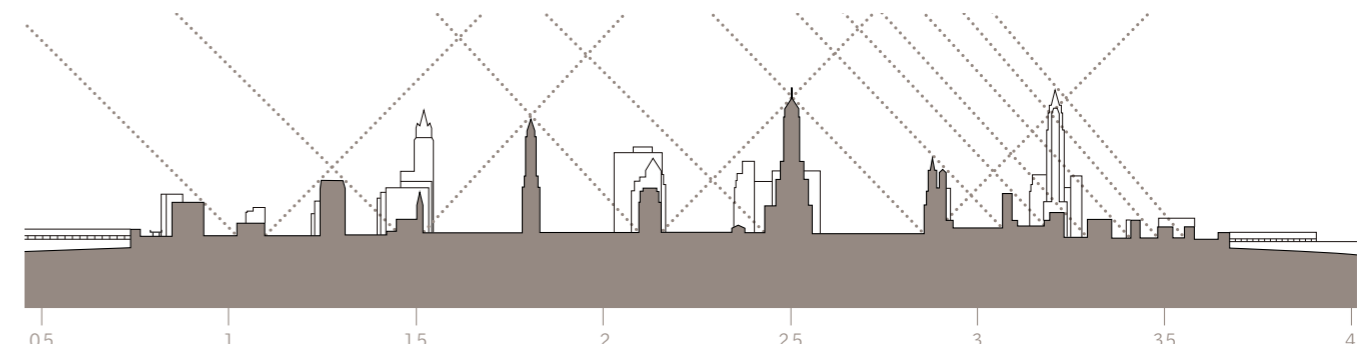
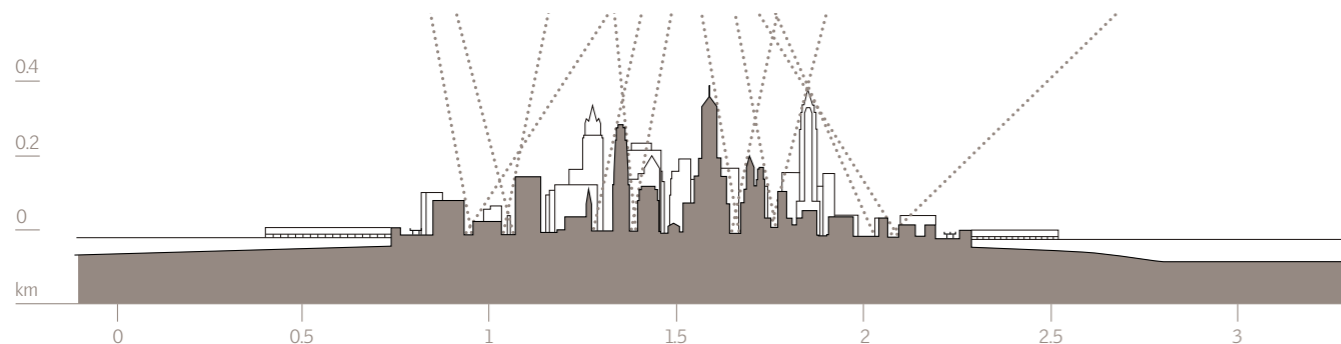
more modern approach. A great failing of architecture and planning in the years that followed was a reluctance to learn from the experience of others. The ring of new towns built around London after the Second World War illustrates the point. The aim was to move half a million people from the poorer parts of the capital to live in healthier, self-contained communities. One of the first of these projects, at Harlow in Essex, was planned to this end. Among other features, it had one of the first large sports centres in England, and its own golf course. Harlow was successful by the standards of the time. One indicator of this was the fall in infant deaths. Between 1961 and 1975, the infant mortality rate in Britain fell from 21.6 to 15.7. In Harlow it fell from 20.6 to 9.0. The mental health of the residents improved too. Careful planning and better housing had raised the health of an industrial working-class community to the level of wealthier middle-class suburb. Years later, a doctor who

“The problem is that the bulk of what is being built today, which could stay with us for hundreds of years, may have even more negative impacts on the urban communities they are designed to serve than the ones built by the well-intentioned social reformers of the last centuries.”

Ricky Burdett and Philipp Rode: *Living in the urban age*. In: *Living in the endless city* (2011).

Comparison drawing showing a section through Manhattan (above) and what it would theoretically look like if all the buildings were spaced according to the building codes of Vienna, Austria.

(Source: Manfred Berthold, TU Vienna)



"The natural world appears to abound with examples of arrangements based in some measure on exposure to the sun. [...] Observations of the modern built world reveal that we have not usually followed nature's example in this regard. Our cities are non-directional. Our buildings are undifferentiated by orientation to the sun. They stand static, unresponsive to the rhythms of their surroundings."

Ralph L. Knowles (1981)

was a member of the design team recalled how he mistakenly thought Harlow would serve as a model for all later new towns. Instead, to his surprise and dismay, the design was roundly criticised: *'It was an autocracy; it was over-planned; it was under-planned; it was too diffuse; it had too few flats; it had too much green space; it was unoriginal; it harked back to the past; it was not towny enough; the main traffic arteries should have been built up; it needed a "grid-iron" pattern for its streets; it was – in the final condemnation – a "first generation" new town. So the smart young planners went ahead and produced the horrors you can see in all too many of the second and third generation new towns. Every error that we had carefully avoided was perpetuated elsewhere with a flourish for its great originality. Tower blocks, we had shown, were suitable for 5% only of the population; the new city planners provided them for 30, 40, or 50%. And when these failed, they banned them altogether.'*¹⁰

PLANNING FOR HEALTH

As the slums in industrial towns and cities of Europe and North America were cleared, and living conditions improved, the threat from infectious disease receded. The harmful effects of bad housing were not as obvious as they had been. The link between housing and the health of the public became less direct. By the second half of the 20th century, the idea that a building could promote health, rather than simply prevent disease no longer informed the design process. In many countries, national policies on health and the built environment separated, and now have different aims. Government guidelines and standards often place more emphasis on the environmental impact of buildings than on improving the well-being of the people inside them. And developers and property investors have not always put occupants' welfare first. Meanwhile, health policy is now largely directed towards treating disease rather than preventing it. Within health care services, poor housing does not feature prominently. Until recently, building design, housing improvement and town planning were not regarded as health interventions in themselves. And indoor health is not the priority it once was.

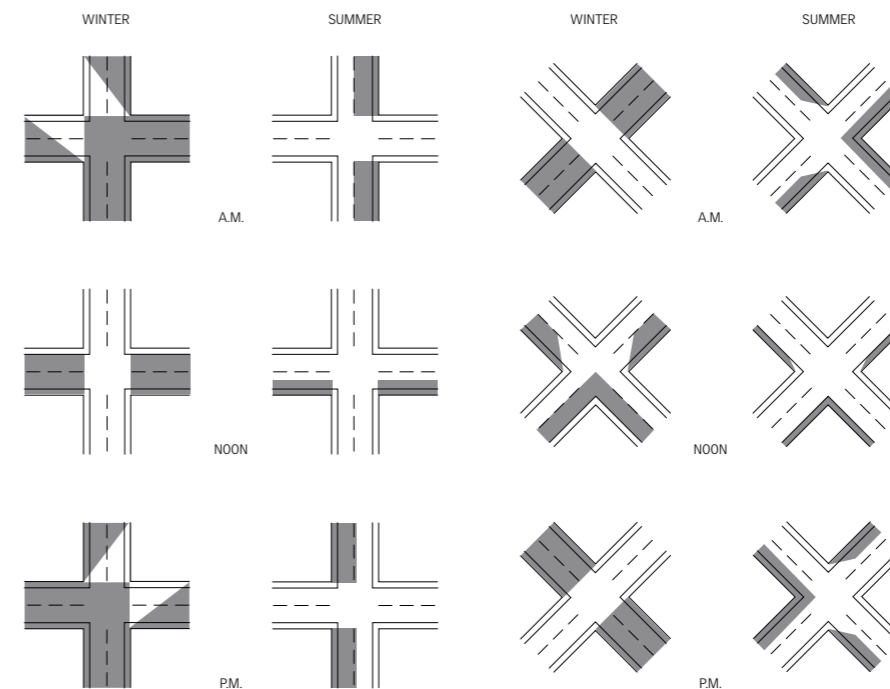
There is growing concern about the levels of pollutants in modern buildings; many of which are sealed and conditioned.

Current codes and standards specify environments that minimise discomfort. Yet there is no scientific evidence that this has health benefits. Indeed, a neutral, closely controlled environment may compromise well-being over the longer term. Designing for comfort in this way runs counter to a basic principle identified by Florence Nightingale and others. Historical and scientific evidence suggests that for health, indoor conditions should follow those outdoors. Building occupants should not be isolated from natural changes in humidity, temperature and light levels in the way that many of them now are.

CITIES AND THE SUN

If we turn to today's cities, some of them provide all of their residents with clean water and sewerage. Many do not. Those that do often follow the western model of urban living, in which the motor car predominates. Roads and highways cut through urban centres, improving traffic flow by keeping vehicles separate from pedestrians. When not in their cars, city dwellers spend most of their time indoors. They may not be troubled by the illnesses endured by people living in slums - diarrhoea, tuberculosis, measles, diphtheria and the rest. But they are at risk of diseases brought on by sedentary indoor lifestyles. On average, people now spend about 90 per cent of their time indoors. And one thing they do not see much of is sunlight. An experiment from the 1990s confirms this. Scientists fitted light detectors to the head and wrists of volunteers in San Diego, California. Measurements showed they were only in daylight at levels greater than 1000 lux for about 4 per cent of the time. Much of the rest was at an average intensity of about 100 lux. If people living in one of the sunnier regions of the United States limit their time in bright light to this extent then those of us living further north are likely to be equally light deprived, perhaps even more so.

The sun is our external timekeeper.¹² Without the time-cues given by the sun, the underlying rhythm of the human body can become disturbed. This can cause a range of health problems. Disruption of the body's 24-hour clock has been linked to many of the diseases we now associate with urban living: depression; heart disease; diabetes; obesity; and cancer. New research shows disruption of



The orientation of streets has a significant effect on the availability of sunlight in streets. This diagram shows the shaded portions of a typical street intersection during different times of day and year, depending on its orientation. It can be seen that a street grid oriented SW/NE and NW/SE is actually better for sunlight provision than a traditional north/south and west/east grid, where a large number of streets remain entirely in the shade for long periods during winter.

the circadian clock also weakens resistance to infection.¹³

Besides being the human body's external timekeeper, the sun is its main source of vitamin D. Recent studies have found alarmingly high rates of vitamin D deficiency throughout Europe, North America, the Middle East and elsewhere. In Britain rickets, the classic bone disease of vitamin D deficiency, is resurgent. In Australia, such is the concern about vitamin D deficiency and poor bone quality, there has been a reversal in public health policy. People living in some Australian states are now advised to go out in the sun rather than avoid it. Research now shows that in addition to bone mineralisation, vitamin D is fundamental to the functioning of the immune system, the brain, to physical strength, balance, resistance to infection and so on. Unfortunately, getting out into the sun to make vitamin D, or synchronise our body's biological rhythms, can be difficult in the developed world. Buildings are not as open to the sun as they used to be. And neither are towns and cities. In practice, it is the orientation of the buildings within it; and how much sunlight each one gets. If the streets are not lined up for the sun then little else is. It seems Australia's buildings are not.

The Chief Health Officer of Victoria recently published guidance on the subject entitled *Vitamin D & the Built Environment in Victoria: A Guideline for Planners, Engineers, Architects & Policy Makers in Local & State Government*. This illustrates the extent to which public health policy, building regulations and planning laws have underestimated the importance of the sun in promoting health.

NEW DISEASES, NEW CITIES

Over the past half-century, thanks to antibiotics, bacterial infections have been amenable to treatment. And it is fair to say that people in the developed world have become more complacent about infectious diseases than they would have been a hundred years ago. One consequence of this more relaxed attitude is that there has been less emphasis on fresh air, light and cleanliness in buildings than there was during the pre-antibiotic era. Unfortunately, worldwide there is now an epidemic of antibiotic resistance. And the development of new antibiotics has stalled. The 'golden age' of antibiotic therapy may soon be at an end. In 2011, the World Health Organisation warned the situation had reached a critical point. If no action was taken, '...the world is heading towards a post-antibiotic era, in which

many common infections will no longer have a cure and, once again, kill unabated.”¹⁴

To compound the problem, over the last three decades outbreaks of new viruses and other pathogens have become more common. So infectious diseases are set to become more of a public health issue in the developed world than they have been. And many of them, such as avian influenza, SARS and drug-resistant tuberculosis, are diseases of the indoor environment.

Modern buildings and modern cities are not planned to prevent infections spreading. For example, sunlight is the principal natural disinfectant in the environment. It kills bacteria, viruses and fungi that might otherwise infect us. The citizens of Imperial Rome had right-to-sunlight legislation. By contrast, few countries today can claim to be as advanced in this respect. The Romans took the view that it is more effective to prevent diseases than to treat them. Florence Nightingale believed buildings should promote health, not merely prevent disease. In the past, architects, engineers, city planners and politicians worked together with this in mind. There is evidence that some of their work greatly enhanced people’s physical and emotional well-being. In the 21st century, it should also be possible to create sustain-

able towns and cities that have a positive influence on health. While there will be opportunities for innovation, it would be unfortunate if the lessons of the past were overlooked.

Dr Richard Hobday is an engineering consultant who specialises in health in the built environment. He is the author of *The Light Revolution: Health Architecture and the Sun* (2006). He teaches and lectures internationally.

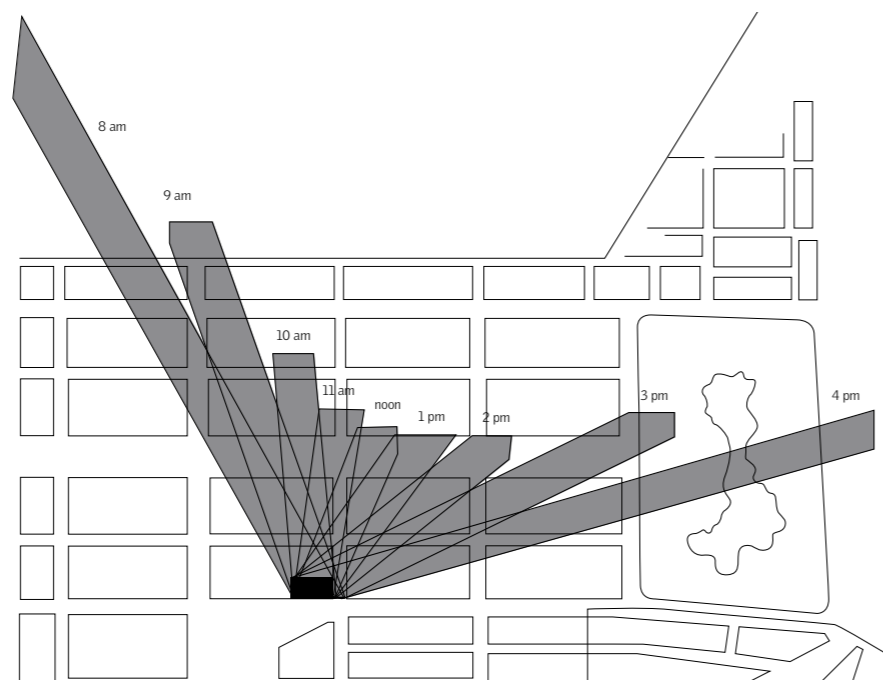
References

1. Rosen G. *A History of Public Health*. Baltimore; Johns Hopkins University Press, 1993.
2. Hippocrates. *Airs, Waters, Places*. In: Jones WHS, editor and trans. *Hippocrates Vol 1*. Loeb Classical Library. Cambridge; Harvard University Press, 1923. pp 71–137
3. Butti K, Perlin JK. *A Golden Thread - 2500 Years of Solar Architecture and Technology*. London; Marion Boyars, 1980.
4. Knapp RG. *The Chinese House: Craft, Symbol*

and the Folk Tradition. Hong Kong; Oxford University Press, 1990.

5. Chen Q, Feng Y, Wang G. Healthy buildings have existed in China since ancient times. *Indoor and Built Environment* 1997;6(3):179–187.
6. Vitruvius. *The Ten Books on Architecture*. (Trans. MH Morgan). New York; Dover Publications 1960.
7. Cicero. *De Legists*. Book 3, Chapter 3, Section 8.
8. Nightingale F. *Notes on Nursing; What it is and What it is Not*. New York; Dover Publications, 1969.
9. McDonald L. (Ed.) *Florence Nightingale on Society and Politics, Philosophy, Science, Education and Literature*. Volume 5 of the *Collected Works of Florence Nightingale*. Waterloo, Ontario; Wilfrid Laurier University Press, 2003. p171.
10. Taylor. The natural history of preventive medicine, or breaking the chains of causation. *Br Med J* 1980 Sep 27;281(6244):849–53.p852.
11. Espiritu RC, Kripke DF, Ancoli-Israel S, Mowen MA, Mason WJ, Fell RL, Klauber MR, Kaplan OJ. Low illumination experienced by San Diego adults: association with atypical depressive symptoms. *Biol Psych* 1994 March 15;35(6):403–7.
12. Roenneberg T, Kumar CJ, Meroow M. The human circadian clock entrains to sun time. *Curr Biol* 2007;17(2):R44–5.
13. Silver AC, Arjona A, Walker WE, Fikrig E. The circadian clock controls toll-like receptor 9-mediated innate and adaptive immunity. *Immunity* 2012 Feb 24;36:251–61.
14. Chan M. *Combat drug resistance: no action today means no cure tomorrow*. Statement by WHO Director-General. World Health Day 6 April 2011. http://www.who.int/mediacentre/news/statements/2011/whd_20110407/en/index.html

In the early days of North American high-rise architecture, there were vigorous discussions on the effects of high-rise buildings on sunlight provision in cities. This diagram was drawn by Boston Architect William Atkinson in 1909 to prevent the construction of a 300-foot tall building in the city. It shows the shadows cast by the tower at different times of day during midwinter solstice.



THE EMERGENCE OF THE TRANSMODERN CITY

The future adaptation and evolution of the city towards sustainability can be understood as a function of global cultural change. As the values of modernity give way to the values of transmodernity, ecological concern and spiritual self-discovery will be in the ascendant. Two waves of change based on these values could shape architecture and urban design far into the future.

By Hardin Tibbs

IMAGINE AN ADVANCED city that is at one with nature, completely sustainable. This city lies in the future, built by a high civilisation that has gained the wisdom to master its soaring technological capability.

What would this city be like? What challenges would have been overcome to build it, and what would be the path leading to it? Is such a thing even possible?

Multitudes of future scenarios fan out in front of us, prefiguring our hopes and fears, our expectations and our speculations. Today’s civilisation – our global urban culture – is transforming rapidly as it embarks on a journey beyond modernity. Our sense of the destination depends on how deeply we investigate our predicament. If we diagnose superficially, we may easily see a world of chaotic insurrections, in which the future city is a sprawling favela. An ad hoc urban hack, in which planning is by self-permission and opportunistic hustle. This is the Middle

Agas redux, running on dwindling fossil fuels and mobile phones, intent on evading the dying clutches of 20th century centralised bureaucracy.

But this is surely not the best we can hope for. In the original spirit of *la prospective* – Gaston Berger’s normative approach to looking at the future¹ – we can try a different tack, and look to the best of possible new creation, the maximum potential of our time.

Admittedly, cities are hardly ever the result of conscious comprehensive design. We build them largely as a spontaneous collective enterprise, almost unconsciously. They are shaped by the combined interactions of cultural, social, economic, technological, and regulatory forces – a large scale fusion of desires, capabilities and constraints. They are the human equivalent of ecostructures – the term ecologists use for structures such as termite mounds and beaver dams.

Cities are where people come together, drawn by an age-old desire to be in society with others. Shared cultural values then set the aesthetic and functional aims that determine urban design interventions. And as human culture gradually evolves, it shifts the agenda of urban design and reshapes cities.

Cities express the capability of the human species at any given time, and if we defocus somewhat in time and space, we can read the overall emergent pattern. Cities may grow outside the control or deliberate design of any individual or organisation but, according to research at the Santa Fe Institute, they show a remarkably consistent infrastructural pattern everywhere around our globalised world.

Research by Geoffrey West² and Luis Bettencourt has shown that so-called ‘superlinear scaling’ applies to all cities, meaning that everything from the total

"It is unlikely that the planet can accommodate an urbanised humanity that routinely draws resources from ever more distant hinterlands, or routinely uses the biosphere, the oceans and the atmosphere as a sink for its wastes. Can cities transform themselves into self-regulating, sustainable systems – not only in their internal functioning, but also in their relationships to the outside world?"

Herbert Girardet in:
Creating Sustainable Cities (1999)

area of road surface and the dimensions of the sewer system, to violent crime and personal income can be predicted from the size of the city's population. Furthermore, as cities get larger they get more efficient, unlike corporations. When a city doubles in size, every measure of economic activity increases by about 15 per cent per person, along with crime, traffic and disease, unfortunately. In contrast, corporations show sub-linear scaling, so that as the number of employees increases, the profit per employee falls.

BEYOND GLOBAL SCALE:

THE RISE OF TRANSMODERN VALUES
Cities express both human strengths and shortcomings, which means that trying to understand the future of humanity may be the best way to foresee the future of the city. The humans we aspire to become will build the cities we aspire to live in.

One way to understand the future evolution of humanity is to look at the changing beliefs that determine cultural values. Social research since the 1970s indicates that cultural values around the world are shifting towards what have been called 'post-materialist' or 'cultural creative' values. The shift is being propelled by the twin forces of growing affluence and mounting global issues. It appears that the new values are now reaching a tipping point and are poised to become the dominant cultural values, first in the most affluent countries, followed soon after by industrialising countries. The key features of these new values, therefore, give a sense of the future worldview of society.

The new values include a quest for psychological and spiritual self-discovery, a desire for personal authenticity and self-responsibility, an intense concern for social justice and equity, a push for ecological integrity, and a demand that institutions and businesses respect and respond to these aspirations. Taken together, these values represent a marked shift beyond the cultural values that characterised modernity³.

Two key features of modernity have been its continual growth and its ability to transcend almost any limit. Now, at global scale, it is finally reaching limits of a type it cannot transcend – where continued growth turns into active disadvantage. To develop further means to enter transmodernity – a new era beyond the modern that is based on a different way of thinking.

In envisaging how the onset of transmodern values may reshape cities, it is possible to imagine two waves of change. These would be reflected in evolving themes in architecture and urban design that would gradually reshape the city.

The first wave of change might be termed eco-integration, and is already underway. It involves fundamental technological redesign to reduce the ecological footprint of cities and the economy as a whole.

The aim of this redesign is ultimately to address the urgent problem created by three fundamental and interrelated aspects of the global system:

- *The size of the natural global environment is fixed* (i.e. the area of the planet surface and the size of the biosphere – the planetary network of ecosystems – is not expanding)
- *The volume of industrial production worldwide has now grown literally as big as nature* (as measured by comparing the volume of industrial flows with the flows of the various chemical elements, such as carbon, in and through the biosphere)⁴
- *The growth of worldwide economic consumption is exponential* (it is doubling every 20 years, as a result of the combined growth of population and affluence).

Put together, these three fundamentals mean that, within 20 years, the volume of consumption would be (if it could get there) twice the size of the biosphere. But this is implausible, since today's pattern of economic consumption continuously draws resources from, and dumps waste back into, the biosphere, which would collapse under the load.

Systems analysis going back to the 1970s has indicated that the crunch of these three factors will make existing industrial society unsustainable within one to two decades from now⁵. In other words, the global industrial economy will collapse sometime before 2030 if we do not reinvent it to work on different technological principles, accompanied by new social values.

Looming resource and energy scarcity is an early signal of this potential collapse. This arises from using nature both as a source of raw materials and a sink for waste and pollution, on a literally plan-

etary scale. A typical example is that the amount of waste carbon dioxide released into the atmosphere – now roughly 30 billion tonnes a year – has been doubling every 20 years for the last half-century or more.

THE FIRST WAVE OF CHANGE: ECO-INTEGRATION

The new industrial operating principles would mean adapting the total use of technology around the world so that it meshes harmlessly with nature. Resource depletion would be addressed by developing closed-loop manufacturing systems, with almost total recycling of all materials and reduction of product weight. Fossil fuel depletion would be offset by developing ambient energy systems, using energy available locally in the environment, such as solar, combined with very high efficiencies on the demand side. Pollution and toxification of soil and atmosphere would automatically be reduced by closed-loop technology and use of ambient energy.

Similarly, the risk of decline in food and water supplies would be avoided by developing a regenerative approach to agriculture that recycles nutrients and avoids runoff, minimises the use of water, builds soil quality, and uses natural methods to

manage pests, assuring a sustainable supply of nutritious, uncontaminated food.

These changes would represent the technical, objective side of the first wave of urban and architectural change. On the subjective side, the domain of cultural meaning, the eco-integration wave would be expressed as an eco-aesthetic style. Biomimetic forms inspired by nature and a progressive blending or meshing of the boundary between technology and nature would gradually become pervasive.

The intense complexity and dynamism of contemporary cities and the eco-integrationist push to reduce the mass of buildings would be reflected in a shift to fluid, kinetic, eco-sensitive forms. The goal of dematerialisation, or what Buckminster Fuller called ephemeralisation, would be enabled by parametric design, in turn permitting high levels of newness, flexibility and renewability, and a reduced ecological footprint.

All new construction would use high-strength low-mass materials, for example with fine nano-honeycomb internal structure, produced on demand using local nano- or bio-tech assemblers. These would form components designed to be easily demountable for reuse or recycling.

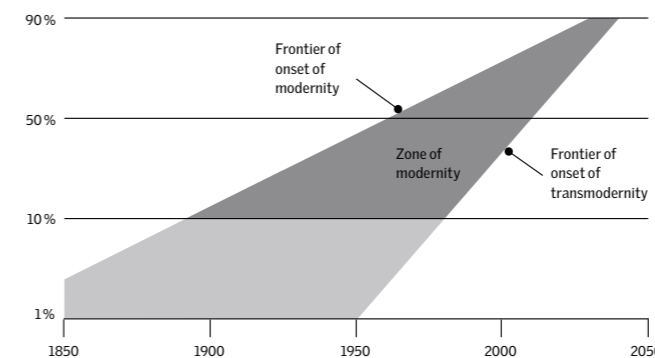
Buildings would be free to evolve from being inflexible failed predictions

(as Stewart Brand described them) to ever-adapting structures that would flow with human and ecological processes, and cities would follow. This transformation would be propelled by the mounting ecological and resource crisis during the early 21 century, but the structural inflexibility and cultural inertia of cities suggest that the changes would only take full effect over many decades. Over this time, the built environment, the ecostructure, would gradually become a series of flexible envelopes and interfaces between processes, reflecting human and natural ecologies in constant interplay. The resulting dynamic, kinetic style may come to be known as eco-morphic – the logical end-point of Patrik Schumacher's view of architectural styles as design research programmes.

THE SECOND WAVE OF CHANGE: SPIRITUAL REDISCOVERY

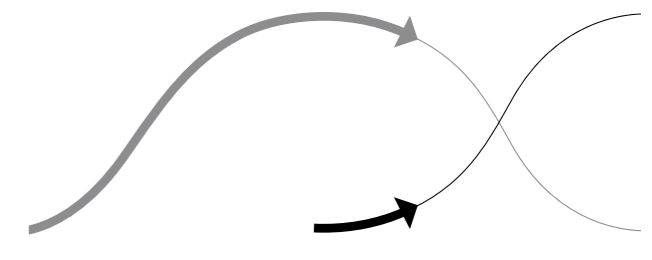
Even as the urban environment progressively makes its peace with nature, the second wave of transmodern change can be expected, perhaps building to full effect only after one hundred years or more. This wave might be termed socio-spiritual awakening, and it would arise from the quest for psychological and spiritual self-discovery in transmodernity.

Modernity as a historically brief pulse between substitution frontiers



Schematic depiction of the rising and declining cultures in the current process of cultural transformation.

(Source: Fritjof Capra)



"Clearly the problem of man and nature is not one of providing a decorative background for the human play, or even ameliorating the grim city: it is the necessity of sustaining nature as source of life, milieu, teacher, sanctum, challenge and, most of all, of rediscovering nature's corollary of the unknown in the self, the source of meaning."

Ian McHarg in: *Design with Nature* (1969)

Initially, during the first eco-integration wave of change, the aesthetics of the built environment would be predominantly biomorphic, echoing the shapes of nature or seeking invisibility in the landscape. This would not last indefinitely. The growing call for spiritual meaning and understanding would demand something deeper.

Charles Jencks has suggested that the entire cosmos can provide a new iconography for architecture, derived from the patterns of cosmogenesis. This, he says, draws a visual language from science and promises to be the ultimate referent for art and architecture. He has been exploring this potential in his own architectural and landscape work, finding inspiration in the spiral foggy traces of the sub-atomic, the great flowing arcs of galaxies, scientific notation spelled out as a pattern on the landscape.

Yet this view of cosmos as iconography refers only to the outer physical cosmos, not the inner cosmology or world of meaning that opens up to spiritual explorers. The cultural convergence of an inner search with the outer scientific worldview would re-situate the transmodern human in a cosmos that is both physical and spiritual, both subjective and objective.

To achieve this, transmodern culture must resolve the contradictions between the objective and subjective, so that the inner cosmos can be fully recognised and reunited with the outer cosmos. The perspective capable of transcending the modernist denial of subjectivity is likely to be akin to one proposed by Edgar Morin⁶. In this view, the entire objective physical universe contains the mysterious otherness that is the conscious subject, which itself holds the entire physical universe within its subjective inner universe of conscious awareness, in an endless recursive loop.

This integral perspective, a union of Eastern and Western thinking, which does not privilege either subjectivity or

objectivity, would open the way to cultural acceptance of the inner cosmos. If what we already know from transpersonal psychology and various spiritual traditions is a guide, it would reveal a complex inner structure of consciousness and being.

THE ECO-SPIRITUAL CITY

The revalidation of subjectivity would gradually alter aspects of social life, because scientific and managerial orthodoxy would no longer be free to reduce human beings to mere biological machines. This would free people to more fully respect each other as unique subjectivities, and promise a time of softer hearts, a life lived more in community.

The inner cosmos would lend itself to iconography too, just as the outer cosmos does. The fusion of the two would carry the deepest symbolic meaning of transmodernity: the process pattern of humanity as an evolving conscious being within a living cosmos.

After perhaps as long as two hundred years, transmodern humanity would find a stable but dynamic accommodation with planetary ecology, and come into alignment with the previously hidden order of a spiritual cosmos. The aesthetic expression of this cultural understanding would no longer simply follow biological forms or sacred geometry, it would be the embodiment of a deep knowledge of the underlying processes and their connection to human life.

In parallel, transmodern structures would become intrinsically eco-integrated – shaped by a dynamic eco-morphic architecture that would literally be given its form by blending with ecological processes. Thus there would be a convergence between the iconography of deep eco-spiritual understanding and the dynamic form of eco-spiritual embeddedness, and the influence of the two would become indistinguishable in the form of built structures.

This would be the ultimate eco-spiritual form of the city, in which objective process became one with subjective symbolism, creating a living form on the land, the home of transmodern humanity.

It is only possible to guess at the appearance and technology of such a city. It would be compact, eco-autonomous, a contiguous kinetic megastructure perhaps, a hybrid of building and city. Its form would be a spontaneous diagram of outer processes and an inner hierarchy of knowing flowing together, maybe a series of concentric circles, linked by radial lines and interfused by open landscape, like a vast Chladni figure.

In this ultimate sustainable city, humanity will be at one with itself, with nature and with the cosmos in all its dimensions.

Hardin Tibbs is a strategist, thought leader and futurist. He is CEO of Synthesis Strategic Consulting and helps companies and government agencies navigate accelerating social and technological change. He teaches at the Judge Business School at Cambridge University and is a fellow of the RSA in London. His ongoing research aims to generate understanding about the future path of the industrial society.

References

- Berger G., *Phénoménologie du temps et prospective*, Paris, PUF, 1964.
- http://www.nytimes.com/2010/12/19/magazine/19Urban_West-t.html?pagewanted=all
- Tibbs, H., *Changing Cultural Values and the Transition to Sustainability*, Journal of Futures Studies, 15(3): 13–32, March 2011. <http://www.jfs.tku.edu.tw/15-3/A02.pdf>
- Tibbs, H., *The value loop – a new framework for business thinking*, Chapter 35 in The International Handbook on Environmental Technology Management, Edward Elgar 2006.
- Meadows, D.H., et al, *Limits to Growth: The 30-Year Update*, London, 2005
- Morin, E., *On Complexity*, Hampton Press, Inc., Cresskill, New Jersey, 2008

CIVIC URBANITY – LOOKING AT THE CITY AFRESH

There is a quartet of concepts that can reshape our thinking about urbanity in the 21st century. They are eco-consciousness, healthy urban planning, the idea of the intercultural city and creative city-making.

By Charles Landry

TOGETHER THESE FOUR concepts frame the idea of civic urbanity. This idea seeks to realign individual desires and self-interest within a collective consciousness focused as much on responsibilities for 'us' or 'our joint world', rather than choices that are only for 'me' and my more selfish needs.

The notion of civic urbanity, which is proposed as a way forward, is a normative idea. It is a promise for a better city. It taps into our deeper yearnings for connection and purpose. Yet it does not come naturally. It has to be fostered and can become part of a new common sense if practiced and encouraged by a revised regime of regulations and incentives. So far it is not the default position that citizens, urban professionals or politicians take.

CONCEPTS TO DRIVE CITY DEVELOPMENT
Eco-consciousness: all cities talk of sustainability. Yet are they making the hard planning choices to counteract an eco-

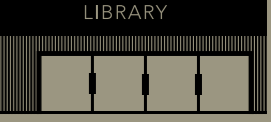
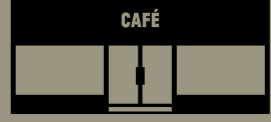
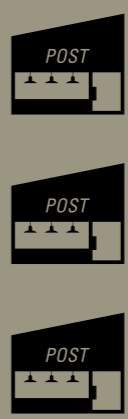
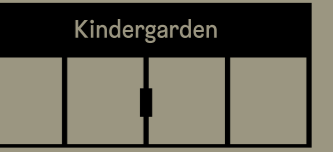
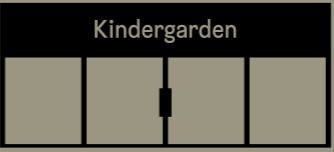
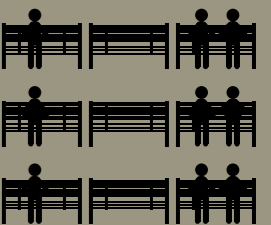
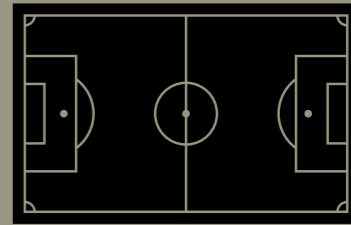
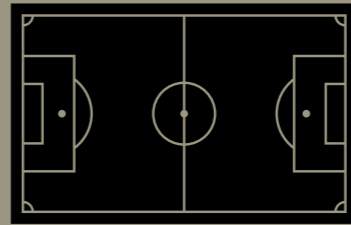
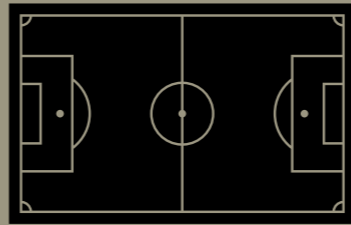
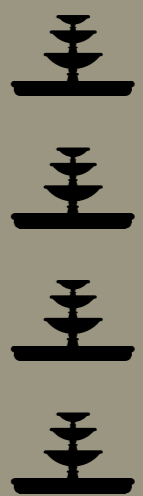
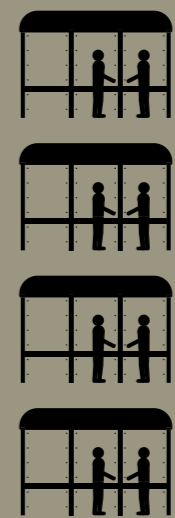
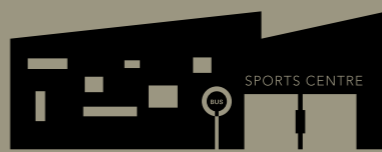
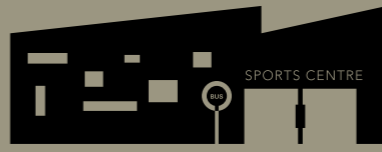
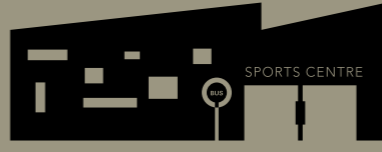
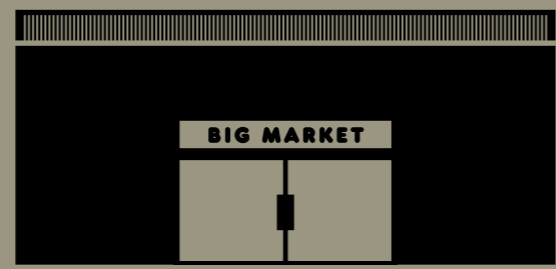
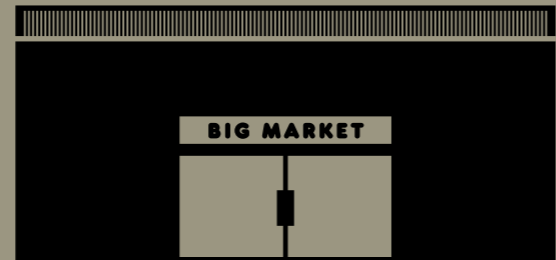
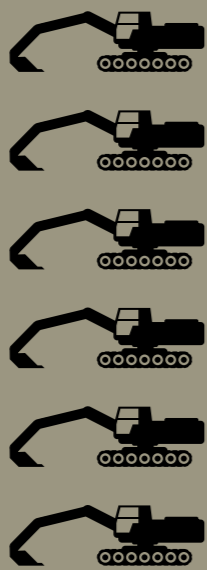
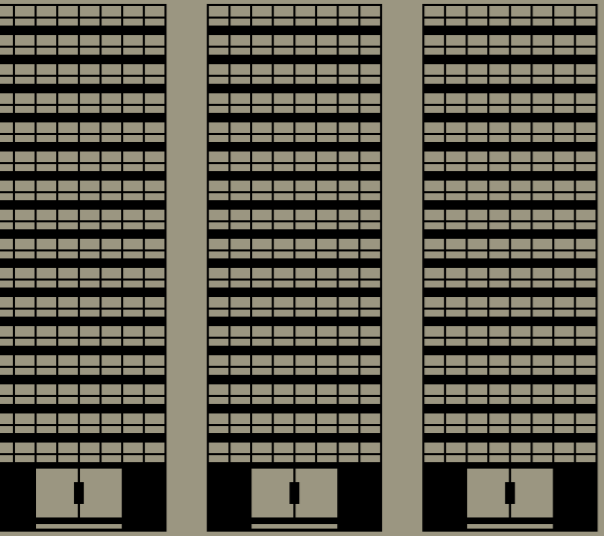
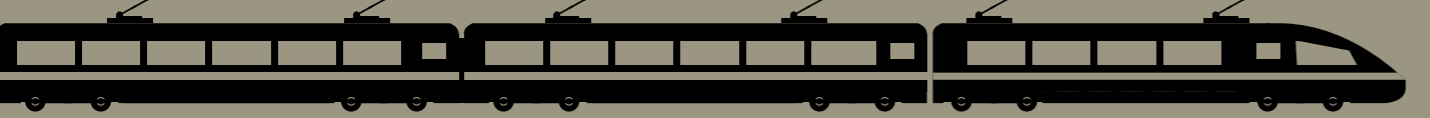
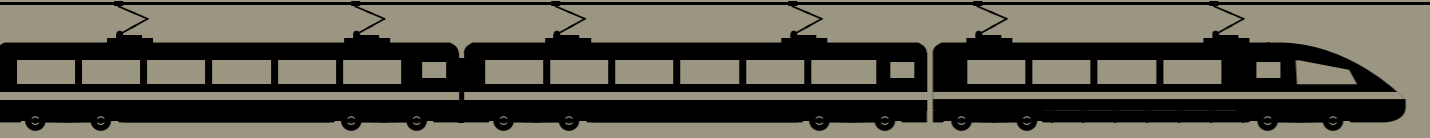
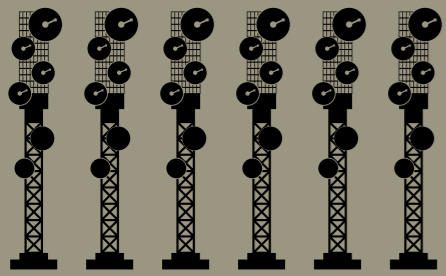
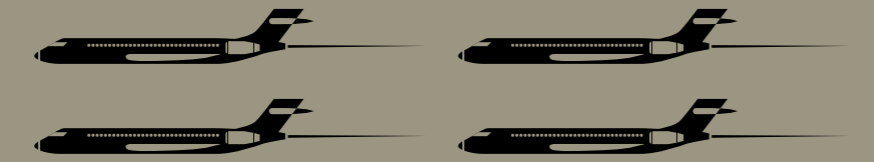
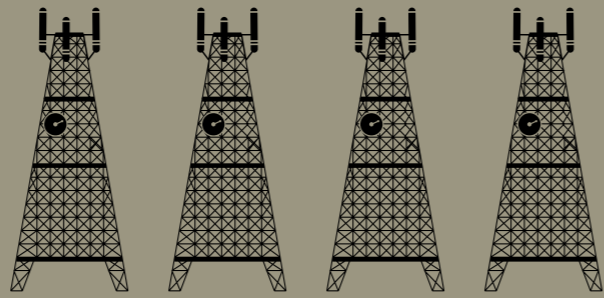
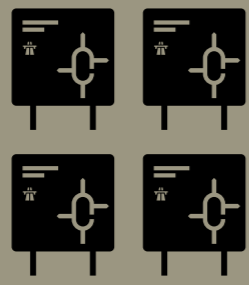
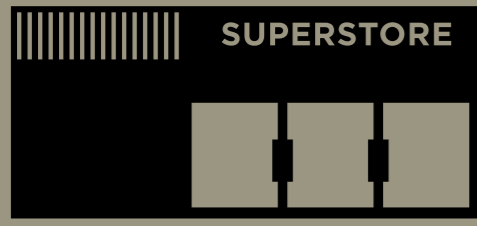
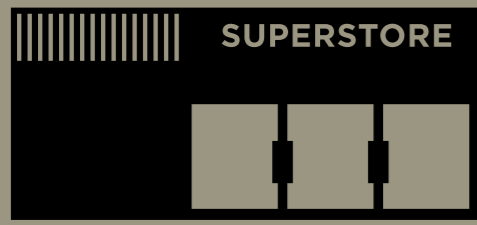
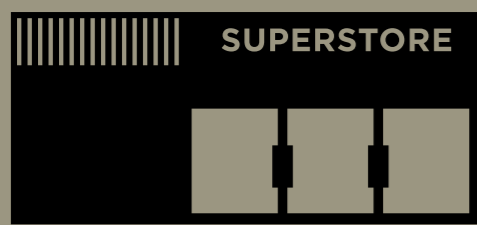
economic dynamic, spatial configurations and physical forms, as well as behaviour patterns that continue to make cities unsustainable in every sense? The necessary and dramatic retrofitting process still has a very long way to go. 'Cradle to cradle' decision-making remains far off.

Apart from strategies and action plans to move towards carbon neutrality, what helps in this process is to make our ecological intentions visible in the physical environment through signs and symbols. These include a new green aesthetic where buildings respond to light and shade, and where water flows or the qualities of recycled materials are made visible. The structures then appear more emotionally enriching. Other devices include competitions, reward and grants schemes to heighten awareness of what is possible, thus spreading good ideas throughout a community. The aim is to make being more sustainable seem normal and even fun.

Take Arlene Birt's Malmö project Visualising Sustainability. This closes the feedback loop between people moving in the city and the digital real-time data collected in multiple, usually separate networks. You get the data back from the actions you take, such as reducing CO₂ emissions. When you are cycling, for example, you can see the positive effects on public screens. This makes people more aware of the effects of their actions and can lead to behavioural change.

Healthy urban planning: urban planning that makes you healthy when you just navigate the city in ordinary, day-to-day ways, for example by providing facilities to walk or cycle to work, has not imbued planning disciplines. The cities we have built and continue to create make us unhealthy.

We now know about unhealthy urban planning. Rigid 'land use zoning', which separates functions rather than blending living, working, retail and fun; 'compre-



"The original European urbanity soon became a source of socio-cultural, economic and political energies. It stimulated urban democracy, urban social life, urban economy, the arts, the sciences, technology. Cities with urbanity took the lead, leaving those without it far behind... such vital cities provided the urban community with an identifiable face and, above all, with pride."

Anton C. Zijderveld in:
A Theory of Urbanity (1998)

hensive development' that can do initiatives in one big hit but so often loses out on providing fine grain, diversity and variety; 'economies of scale' thinking, with its tendency to think that only the big is efficient or to produce off-the-shelf physical infrastructures without sensitivity to local needs; and lastly, focusing on the needs of cars, which can lead us to plan as if the car were king and people a mere nuisance.

A healthy place is one where people feel an emotional, psychological, mental, physical and aesthetic sense of well-being; where doing things that make you healthy happens as a matter of course and, incidentally, not because you have to make a big effort. A healthy place throws generosity of spirit back at you. This makes you feel open and trusting. It encourages people to communicate across divides of wealth, class and ethnicity. It makes for conviviality. And having trust is the pre-condition for learning, creativity and innovation.

The intercultural city: all our bigger cities are becoming much more diverse in their make-up. Multiculturalism as a planning concept and as the predominant approach to policy, acknowledges these differences. It highlights the need to cater for the diverse needs that exist within cities. Interculturalism goes one step further and has different aims and priorities, asking 'when we are sharing a city, what can we do together across our cultural differences?'. It recognises difference, yet seeks out similarities. It high-

lights that, most of us, in reality, when we look deep, are hybrids, and so downplays ideas of purity. It stresses that there is one single and diverse public sphere and it re-sources the places where cultures meet. It focuses less on resourcing projects and institutions that can act as gate-keepers and instead encourages bridge-builders. In so doing it does not consider that there is a cosy togetherness. It acknowledges the conflicts and tries to embrace, manage and negotiate a way through them. based on an agreed set of guidelines of how to live together in our diversity and difference.

In total, it goes beyond a notion of equal opportunities and respect for existing cultural differences in order to achieve the pluralist transformation of public space, institutions and our civic culture.

Creative city-making: creative city making seeks to address the escalating crisis cities face that cannot be solved by a business-as-usual approach. It includes the challenge of living together with great diversity, it addresses the sustainability agenda and helps cities rethink their role and purpose in a changing world in order to survive well economically, culturally and socially, and to manage increasing complexity.

Creative city-making argues that curiosity, imagination and creativity are the pre-conditions for invention and innovation to develop, as well as solving intractable urban problems and creating interesting opportunities. Unleashing the creativity of citizens, organisations and the city is an empowering process. It harnesses potential, it searches out what is distinctive and special about a place and is a vital resource. It is a new form of capital and a currency in its own right. Creativity has broad-based implications and applications in all spheres of life. It is not only the domain of artists or those working in the creative economy or scientists, though they are important. It includes people like social innovators, imaginative bureaucrats or anyone who can solve problems in unusual ways. Cities need to create the conditions for people to think, plan and act with imagination.

To make this happen requires a different conceptual framework. The capacity of a place is shaped by its history, its culture, its physical setting and its overall operating conditions. This determines its

character and mindset. For too long there has been an 'urban engineering paradigm' of city development focused on hardware. Creative city-making, by contrast, emphasises how we need to understand the hardware and software simultaneously. This, in turn, affects the 'orgware' of a city, which is how we manage the city under these new conditions. Today the essential element of the personality of many cities is their 'culture of engineering'. The attributes associated with this mindset are both positive and negative. It is logical, rational and technologically adept, it learns by doing, it tends to advance step by step and through trial and error. It is hardware-focused. It gets things done. There is a weakness in that this mindset can become narrow, unimaginative and inflexible and forget the software aspect, which is concerned with how a place feels, its capacity to foster interactions and to develop and harness skill and talent.

Overall, key themes highlighted by the four concepts are caring for others and the wider world, celebrating and fostering distinctiveness and identity, providing more liveable places and being open minded in order to find solutions to any urban challenge.

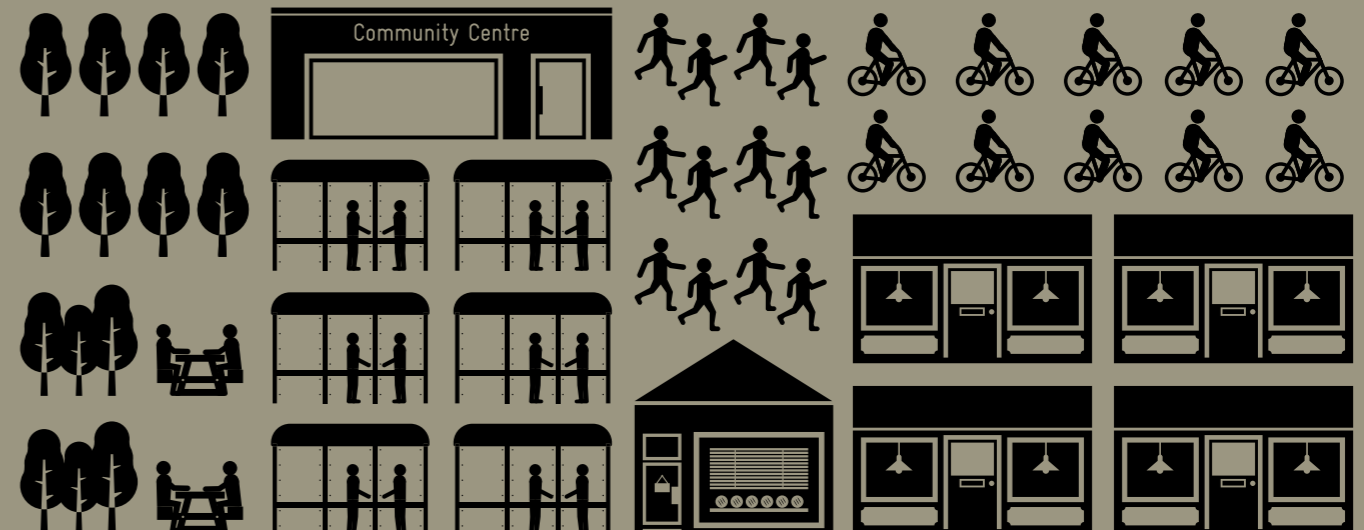
URBANITY AND ITS PAST

Urbanity and being urbane has a combined economic, social, political and cultural history that is useful to retrace for today and to recapture its best features. It represents an urban culture. The tradition of urbanity is essentially European, reflecting an attitude that emerged in the late Middle Ages in Italian city states and in Northern Europe, especially the Hanseatic League cities. It was led by merchants who tried to escape from the shackles and constrictions of feudalism to trade in a less impeded way. In so doing, they became a vigorous group with their own political, economic and cultural interests that successfully competed with the existing medieval order. They developed what became the bourgeois style of life, including their own learning and cultural institutions and norms and values. They were anti-feudal and, in their context, democratic; they were open and cosmopolitan and proud of their city and invested in it. They reflected a new emerging economy based on trade and new methods of production; there were new professional bodies, education and sci-

GENERATING CIVIC URBANITY

Here are some guidelines to build civic urbanity:

- 1 The first step is to bring the concept of civic urbanity into wider circulation to discuss its merits and possibilities.
- 2 Spell out its potentially positive impacts to solve problems across a number of domains. This process builds evidence by showing examples of good practice.
- 3 Persuade a city to explore civic urbanity in detail and to make this a policy programme. This will involve bringing a cross-departmental group together from physical planning, health, social affairs, economic development, environment and culture.
- 4 Develop a professional development programme to assess the city through various lenses, such as healthy urban planning or how interculturalism could work.
- 5 Undertake practical projects that embody the spirit of civic urbanity.



"Today we begin to see that the improvement of cities is no matter for small one-sided reforms: the task of city design involves the vaster task of rebuilding our civilization. We must alter the parasitic and predatory modes of life that now play so large a part, and we must create region by region, continent by continent, an effective symbiosis, or co-operative living together."

Lewis Mumford in:
The Culture of Cities (1938)

ence institutions and a focus on rational calculation. This gave citizens a sense of collective identity and shared solidarity reflecting an attitude to life. The city became more important than familial ties, clan bonds or ethnicity. This allowed for greater mobility. This was a completely different worldview.

We are at a similar junction today and a new, more knowledge-intensive economy is emerging. For our purposes, it is the commitment to the city rather than to particular interests, a concern with its identity and openness that are significant from this past urbanity. This represents a civic culture.

In time as the nation states evolved, the role of cities changed. Their independence declined as capital cities like London or Paris began to dominate. Equally with the rise of states, the force of identity shifted to the nation, thus diminishing the power of cities. The rise of a more centralised welfare state in some countries exacerbated this situation.

It is unwise to idealise this original bourgeois urbanity, since it subsequently degraded and became superficial and consumption oriented. So today we sometimes interpret urbanity or associate it as a synonym for being suave, refined or well-mannered. Others see it as something to do with café culture, being somewhat cool, or a place with many cultural choices. Yet others of a more post-modern bent think that whatever a city happens to be represents its urbanity. They might say a concrete jungle and dreadful place is

simply a form of modern urbanity rather than a place where urbanity needs to be re-created.

BARRIERS TO URBANITY

Urbanity in my definition is not a merely descriptive term but a programme for action. Today, the world is becoming ever more mobile, people identify with various places, and cities increasingly focus on attracting this work force. These itinerant citizens have a different relationship to their city. It is less intense or long term and there is less commitment to place than in past decades. Equally the city usually has less power over key issues that determine its fate, such as education, transport and social welfare. It is less able to create its own rules, such as establishing its own citizenship with appropriate rights. At the same time, many independent voluntary and community structures, which were historically vital as the mediating institutions and 'nervous system' of a city, have weakened relatively as they are more reliant on national governments for survival. This makes our urban culture a reduced one, because it has fewer levers to help it develop citizens and so the civic. This decline in engagement is visible everywhere. It is reflected in low voting rates and the decline in trust in other people and institutions. As a consequence, the invisible threads of connection that make community work weaken. Not surprisingly, therefore, when we think of urban culture, we think merely about the atmosphere, events and arts of a city.

Our notion of 'civic urbanity' has more lofty aims. Yet how, in this overall context, do you develop a 'civic urbanity' where place or our sense of anchoring are not what they used to be, where virtual and real worlds blend more readily, and where globalisation changes the social life of communities in often negative ways so that they feel fragmented?

BEING CIVIC

Being civic is to be a full citizen, which is a person engaged with their city in multiple ways on an on-going basis in order to improve their lives and those of others. It is about feeling that 'you' and the 'city', and every brick or blade of grass in it, merge into one as if it were part of you. The city owns you and you own the city. Small day-to-day things, like the regular breakfast at a local café or the local dentist that you

have seen for years, and occasional larger events, weave a web that over time feels like community. This familiarity happens imperceptibly, step by step as associations with place and people builds up. These create memories, meanings and histories. This identification takes time. It is the reason why people often like places that, to others, are faceless, ugly or soulless because these places can draw in so many experiences, like a bench where you had your first kiss, and so much of people's identity is invested and embodied in them. There is a danger that this can entrap you and become claustrophobic as it closes you in, especially if the city in question is static and unchanging. The young, and especially the ambitious, prefer to escape and may prefer a place that is on the move. This signals excitement, stimulation and being where the action is. Yet acting in a civic way can, in principle, both deepen identity whilst developing and changing the city, so making it feel alive and alert. The focus can be vast from shifting the city to be green, to fostering local entrepreneurship or getting different groups to mix or celebrate. Throughout history, being civic has been linked to the democratic impulse. This implies being active and so fosters a realm of debate and public discussion. Citizens at their best are thus makers, shapers and co-creators of their evolving city. They are producers of their place rather than merely consumers. The danger for most cities that need to attract the semi-permanents and itinerants with talent is that those have little time to build commitment, direct involvement, participation and loyalty. Instead the buzz and liveliness is created for them, so reinforcing the consumption bias.

To be civic often involves challenging the status quo and official institutions and being an activist. This builds up a civic society as a collection of engaged individuals often acting voluntarily, as well as organisations and institutions that work together in a way that official bodies cannot or will not.

Charles Landry advises cities on their future. He has written several books, most recently *The Origins and Futures of the Creative City* and *The Sensory Landscape of Cities*. For more details, go to www.charleslandry.com

A CALL TO ACTION – OUR CITIES OURSELVES

There is a general consensus that the world's megacities will continue to grow during the decades to come. Urban poverty and inequality, resource abuse and the lack of adequate housing and urban services are thus bound to become ever more pressing issues. To overcome them, inventive approaches that focus on the human potential in cities are needed.

By Janice Perlman

THIS ARTICLE is a call to action. It argues that we have a short window of opportunity to make a difference in the way our cities work. If we do not act now, our urban centres will continue to reflect the vested interests of the privileged few to the detriment of the urban poor, the environment and future generations. I offer five considerations for moving forward: 1) non-reformist reforms; 2) transparency; 3) negotiated solidarity; 4) diversity and density; and 5) infrastructure leapfrogging.

TO PLAN IS HUMAN, TO IMPLEMENT DIVINE

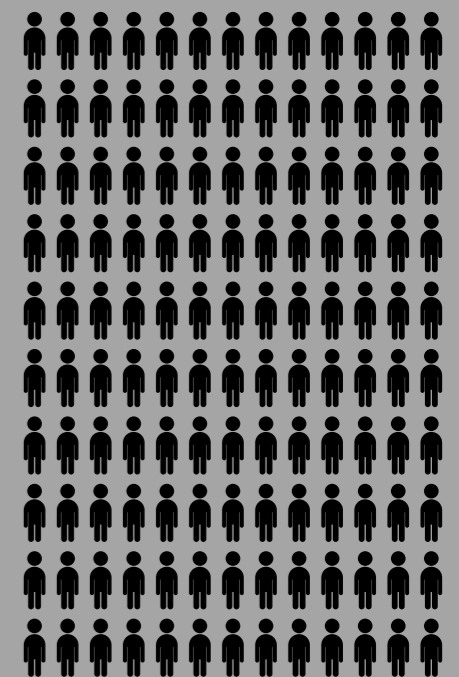
If we are serious about moving from the idea of inclusive sustainable cities to the implementation of this idea, the time to act is NOW. If we fail to generate the public support, political will and economic momentum to make the leap now from principles and design concepts to tangi-

ble changes in our urban reality, we risk missing a beckoning window of opportunity. For the past several decades many of us have been advocating for more participatory, diverse and re-generative cities.

When I began the Mega-Cities Project 25 years ago¹, people thought I was crazy and that the 23 cities projected to reach populations of 10 million people or more were certain to implode. They could not believe that in short order there would be more people living in cities than in the countryside, nor that the largest and fastest growing of these cities would be in developing countries in which the informal economy and self-built housing would outpace the formal markets. As you can see in the graphs and illustrations in this article, they were much mistaken.

Now there is worldwide recognition that cities and mega-cities are here to stay and that our collective future depends on how well they work. The path forward will

Urban Growth =
Rural-urban migration + reproduction
The world's cities are growing by close to 200,000 people a day; almost 1.4 million people a week, close to 70 million people a year i.e. 130 people per minute



be guided by the extent to which urban policy and the interventions of architecture, design and planning may be geared to conserve resources, generate livelihoods, nourish conviviality and integrate the urban poor into the global talent pool of intellectual capital.

Today, there are a billion people living in informal settlements, unrecognized, un-serviced and excluded from “the right to the city.” Virtually all of the population growth in the coming decades will be urban growth in the cities Africa, Asia and Latin America - and it will be concentrated in the slums and squatter settlements of these cities. By 2030, this number will double to 2 billion, representing 1/4 of the world population; and by 2050 there will be 3 billion, just over one in three people on the face of the earth.²

If, as some economists like to think, the private housing markets would automatically adjust to the demand, then the newly-arrived migrants from the countryside would find shelter they could afford to rent or own; or a tiny parcel of land to buy and build on. But this is not the case, and the families who have risked all to move to the cities for better opportunities, end up settling on vacant lands and building up their communities there. This population is failed not only by the private real estate markets but by government policies as well. Neither national nor local governments have shown a willingness to commit the resources needed to house this aspiring population. From the 1960s until the mid-1980s or even the 1990s, the typical policy response was to eradicate the self-built communities and, when it did not work, to send their residents back to the countryside - forcibly relocate them to public housing projects on the urban peripheries. This proved an economic, social and political disaster for the governments and devastating for the displaced families.

More recently, faced with rising demand for housing and growing housing deficits despite sporadic interventions, several national governments, including those of Brazil, India and South Africa, have recognised informal settlements as part of the solution rather than the problem, and initiated massive on-site upgrading projects. That is, rather than move the people to the urban infrastructure, they are installing basic urban services and infrastructure where the people are.

THE EUROPEAN/NORTH AMERICAN IDEA OF SUSTAINABLE CITIES VERSUS THE VIEW FROM THE GLOBAL SOUTH

In working towards sustainable cities, we have to think beyond “car-free cities”, rooftop gardens and pocket parks. While we advocate for enlightened design for public transit, bikeways, parks over freeways, urban agriculture and recycling, we are aware that these are only one level of response to the challenge of greener cities. Likewise, as we argue for building and zoning regulations to promote smart buildings, minimise home-to-work travel and maximise mixed-use, we know that in most cities large numbers of people are struggling with how to find sustenance and shelter. The urban poor are already walking and biking (or taking public transportation if they can afford it) and already re-using more than they throw away and growing their own food (space permitting). They know a lot about making more from less and this practical wisdom should be part of the solution.

The agenda and goals for Rio+20, the colloquial name given to the upcoming 20th anniversary of the 1992 Earth Summit (UNCED - the United Nations Conference on Environment and Development) held in Rio, reflects a new awareness of the interconnection between inclusivity and sustainability. The stated aim of this year’s summit is: “advancing the green economy in the context of poverty eradication and sustainable development” (bolding mine). The agenda reflects the critical role of cities in shaping the future of the planet and recognises the importance of local authorities and civil society in the process. In contrast, the only mention of cities in the 1992 UNCED was Paragraph 28 on Local Authorities, which was treated as a special interest group buried among the chapters on minorities, handicapped and tribal peoples.

If we do not act now, our urban centres will continue to reflect the vested interests of the privileged few to the detriment of the urban poor, the environment and future generations.

This current model of urban development has left our cities privatising urban services, straining to provide services to their populations within tight budget constraints and pushing the limits of the carrying capacity of their natural resource base to sustain human life.³ This

model - as we have seen worldwide in the past year - is fraying the social contract and leading to widespread unrest as wealth and power become increasingly concentrated in the hands of the few.

HOW TO GET FROM HERE TO THERE?

Five considerations for moving forward: 1) non-reformist reforms; 2) transparency and negotiated solidarity; 3) voice(s) of the people; 4) diversity and density; and 5) infrastructure leapfrogging.

1. *Non-reformist reforms.* What is at stake goes well beyond aesthetic changes on the surface of our cities or the frenzy of urban marketing to make cities more competitive in the global marketplace. In addressing ourselves to “cities for people”, we are really talking about structural transformation, or what André Gorz called ‘non-reformist reforms’.⁴ That is to say, reforms that contest and change the logic of the system, the incentive- and reward structures, the rules of the game and who is at the table. In the Mega-Cities Project, we call these types of approaches ‘system-challenging innovations’. In order to breakout of the self-reproducing cycle of “business as usual” in the world’s cities, we derive inspiration from successful (often grassroots-grown) experiences that turn the tables.

I recently found an example of this in India. Among the poorest of the poor in Indian cities are lower caste women scrap collectors (wastepickers, garbage collectors and itinerant waste buyers). In Pune, they joined forces to create a union called KKPKP [Kagad Kach Patra Kashtakari Panchayat]. Started in the late 1990s, they now have over 6,000 dues-paying members. I attended one of their monthly meetings and asked what had changed since they unionised. One woman said,

Let me tell you. We each have a route. I’m the one who collects garbage along one of the main roads here. The police are always harassing us and accusing us of stealing and hiding the goods in these big sacks that we’re carrying. The other day a policeman stopped me along my route and, in a very nasty manner, asked, ‘what do you have in there?’ I told him I had been collecting the garbage all morning and he said, ‘well, dump it out on the street right now because I think you have some stolen goods in there’. He would not believe me so

I said ‘okay’ and dumped everything out on the street. He looked through it and said, ‘oh, you’re right, there’s only garbage in here and it smells awful - you can put it back in your sack’. I looked at him and said, ‘oh no, I’m not putting it back, you’re putting it back.’ He said, ‘what do you mean, me?’ I told him, ‘if you don’t put it back right now, I will put out a mass text to all of our 6,000 members and very soon there’s going to be a mass demonstration on the street here with television, radio and newspaper reporters, and you’re going to be in big trouble!’ And he put it back.

That story gave new meaning to the old saying that “women are like snowflakes - individually they melt, but together they stop traffic.” She did just that. Transformational reforms change despair into hope by showing that a seemingly intractable situation can be changed by a different way of thinking and acting. This, in turn creates a sense of victory and reinforces a “can-do” attitude.⁵

2. Transparency and negotiated solidarity.

In order to have these structural changes, transparency and accountability are essential. With information and knowledge of how decisions are made and who is getting what from city budgets, people can become the guardians of environmental protection and of the just city. They can

hold government accountable. There is no chance of organising against an unbalanced unjust allocation of services and resources across urban neighbourhoods or sub-groups without having access to information about spatial distribution.

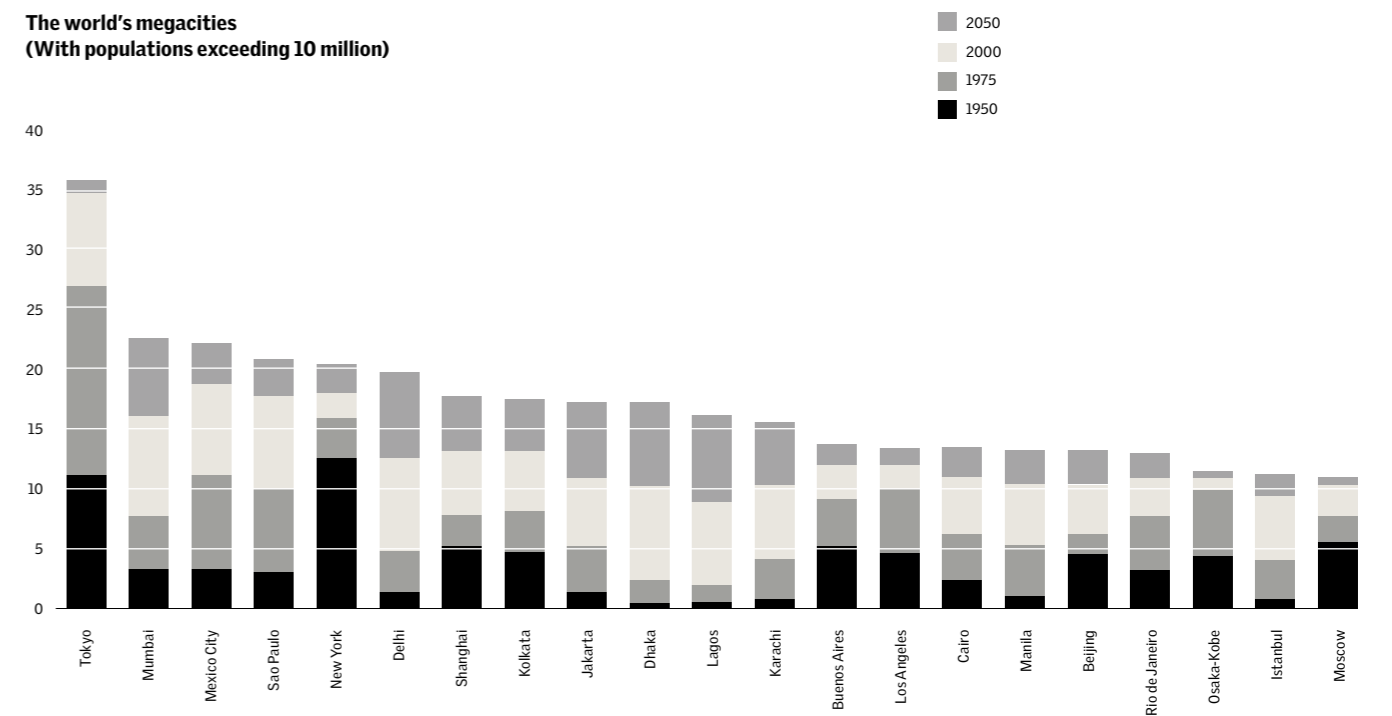
Of the hundreds of urban innovations the Mega-Cities Project has identified over the past 25 years, “Participatory Budgeting”, which started in Porto Alegre, Brazil in 1989, is one of the most widely adapted by cities elsewhere. It decentralises the budget allocation process to neighbourhood-elected councils to set priorities for service delivery and investments. Then representatives from each neighbourhood meet to determine the overall budget, taking into account existing disparities in facilities and services. This produces what has been called “negotiated solidarity”⁶. Even when the citizen councils’ recommendations have only “advisory” functions, the municipalities tend to follow them, which takes them off the hook for difficulty trade-offs in the face of multiple demands.

Another example of the power of transparency is WE ACT and the Environmental Benefits Program (EBP) in New York City. West Harlem residents were fed up with the disproportionate siting of environmentally harmful facilities in their neighbourhood. Three community

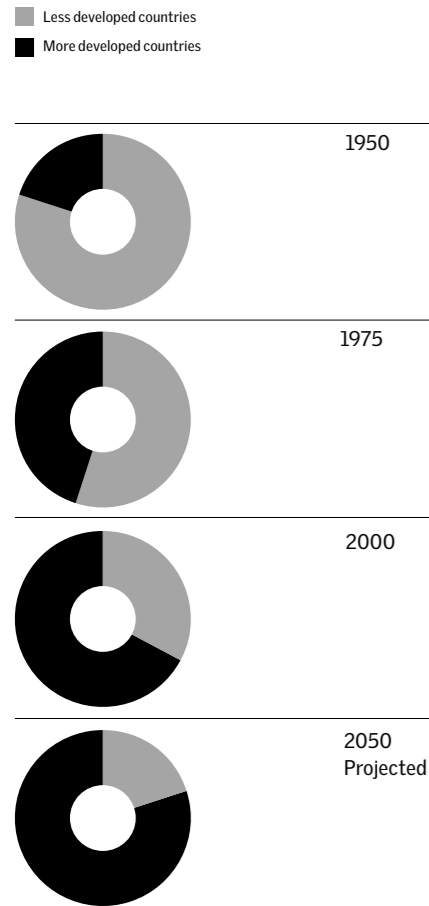
leaders galvanised action against the largest sewer plant in NYC (the North River Sewage Treatment Plant) and six diesel bus depots and founded West Harlem Environmental Action (WE ACT for Environmental Justice). They documented that the pollution levels exceeded federal guidelines and sued the City of New York. With the settlement (an unprecedented \$1.1 million), they established EBP, which hires and trains community members to conduct ongoing air quality monitoring. All fines go back into the budget.

3. *Voice(s) of the People.* The third consideration is the fallacy of the notion of “the voice of the people.” In fact, there are multiple voices, viewpoints, knowledges and ways of knowing within every community, regardless of the degree of exclusion and disenfranchisement. The alignment among these viewpoints varies from issue to issue and moment to moment. Insofar as we are able to acknowledge the conflict model and not expect de facto consensus, we can embrace active listening and mutual learning to work through conflict. The pathway to this kind of realistic give and take is two-fold: accept the built-in self-interests of each sector; and simultaneously give up on NIMBY - Not In My Backyard. In recognising that any negative externality - from sewage treatment

The world’s megacities (With populations exceeding 10 million)



The world's 10 largest cities (by population)



plants to halfway houses – must be located somewhere, we can avoid the dead end of NOPE – Not On Planet Earth. Moving from NOPE to PIN (Possible If Negotiated) is the next step along that path. By expanding the trade-offs to include incentives and desirable outcomes that might offset the negatives, various voices may be heeded.

Past mistakes and failures are part of the self-reflective learning process that we found to be an integral part of such successful collaboration and innovative problem-solving. The private sector rewards experimentation and innovation. Research and Development units (R&D) are set up to try new things – and when they do not work, another approach is tried, based on what was learned. By contrast, in the public sector any small mistake can be used against re-election or re-appointment, so the incentive is to repeat the way things were done in the past, even if they were ineffective – because at least there was no risk.

4. *Diversity and density* are among the most critical ingredients for the soup of creative innovation. The complex challenges of building resource-conserving and people-friendly cities will require multiple minds working on solutions. I found an excellent proof of this in an experiment done several years ago in Manila. Groups of people working together were given increasingly complex problems to solve. Homogeneous groups competed for speed and accuracy against heterogeneous groups. For example, one group was composed of light-skinned middle-aged male businessmen whose earnings were in the top income bracket. The heterogeneous groups were mixed in skin colour, gender, age, profession and income. In solving the simpler problems, the homogeneous groups were faster. They had a shared frame of reference and common understanding that enabled them to work together efficiently. But as the problems became increasingly complex, the heterogeneous groups began to excel and at the very extreme of complexity, only the most heterogeneous groups were able to come up with any solution at all. When this diversity is celebrated and recognised for its worth in our cities, the close proximity of different types of people and their shared challenge of sustainable solutions will provide a perfect petri dish for cultivating innovation.

5. *Infrastructure leapfrogging* provides one of the most promising avenues for re-thinking how our cities work in terms of their ecological footprint and urban metabolism. All cities, all over the world, use basically the same physical infrastructure. Most of our urban systems were invented in the last 12 years of the 19th century – internal plumbing, the internal combustion engine, steel frame buildings, elevators – and have not changed much since. At the time of their creation, there was no awareness that natural resources were limited or that cities might reach sizes of 10 million or more. The major advances made in science and technology over the past 100 years have been applied to the military, to space exploration, and to high tech consumer items – but not to the way our cities function.

Trillions of dollars will be spent in the coming decades to repair the aging infrastructure of our well-served cities and to supply infrastructure to the billion

people living in slums and squatter settlements without access to running water, sewers, solid waste disposal, paved roads, permanent building materials, etc. The re-making of the built environment into a sustainable re-generative smart system, with intelligence and feedback mechanisms has the potential to boost the economy, create jobs, improve our health and well-being and to live lighter on the land.

I would like to conclude by saying everyone reading this magazine has a role to play in expanding the “we” to include the “they” and in bringing about the non-reformist transformation in our cities – both by daylight and starlight.

In the powerful words of an Australian Aboriginal woman: *“If you’ve come to help me, you can go home again, but if you see my problem as part of your own, perhaps we can work together.”*

Janice Perlman is an independent scholar and consultant whose recent book, *Favela: Four Decades of Living on the Edge in Rio de Janeiro* (Oxford University Press), won the PROSE Award for Excellence and a Guggenheim Award. She is the Founder and President of The Mega-Cities Project: Innovations for Urban Life, a transnational non-profit organisation designed to “shorten the lag time between ideas and implementation in urban problem-solving.” Dr Perlman was a tenured professor in the Department of City and Regional Planning at the University of California, Berkeley and has taught at the University of Paris, Columbia, NYU and Trinity College.

Notes

1. For further information on the Mega-Cities Project, see www.mega-cities.net.
2. Projections based on data from UN-Habitat. For the full report see: <http://www.unhabitat.org/content.asp?typeid=19&catid=10&cid=928>
3. Utilising outmoded urban infrastructure designed in a 12-year period at the end of the 19th century when natural resources seemed limitless and the scale of cities manageable.
4. See Andre Gorz, *Strategy for Labor: A Radical Proposal*, Boston: Beacon Press, 1967 (published in 1964 in French)
5. See Janice Perlman, “A Dual Strategy for Deliberate Social Change in Cities” in *CITIES: The International Quarterly of Urban Policy*, February 1990, pp. 3–15. For more on community organising, see Saul Alinsky, *Reveille for Radicals*, Vintage Books, 1946 and *Rules for Radicals: A Pragmatic Primer for Realistic Radicals*, Random House, 1971.
6. For more on the concept of “negotiated solidarity” see Rebecca Abers, *Inventing Local Democracy: Grassroots Politics in Brazil*, Lynne Rienner Publishers, 2000.

THE PERLMAN PRINCIPLES

These principles were derived from the cross-cutting lessons learned from 21 of the world’s mega-cities. They pinpoint the linkages between the local and the global and between poverty and the environment, and show the folly of environmentalists who cast cities as the enemy.

- 1 **There can be no global sustainability without urban sustainability.**
 - Urban concentration/density is essential for the preservation of natural habitats and agriculture.
 - Changing from linear to circular urban infrastructure will utilise waste as a resource improving urban metabolism.
- 2 **There can be no urban sustainability without addressing urban poverty and inequality.**
 - It is fruitless to “blame the victim” for polluting watersheds or bays when 40% of city populations are not served by the sanitation systems.
 - Likewise, people who are unable to purchase cooking fuel, are going to use other sources such as trees.
- 3 **There can be no sustainable solutions to poverty or environmental degradation without the vibrancy of civil society.**
 - Grassroots initiatives and independent non-profits are the most fertile sources of urban innovations.
 - “Small is beautiful” but if it is still small, it is still small – and the scope of the urban problems is immense.
- 4 **There can be no significant impact without scaling-up local innovations to the level of the problems, either by:**
 - sharing workable solutions directly among communities or
 - adaptation into public policy
- 5 **There can be no meaningful urban transformation without:**
 - changing incentive system, rules of the game and players at the table
 - forming collaborative partnerships among mutually distrustful sectors
 - linking the local to the global through a transnational network speaking for the disenfranchised and the future generations.
- 6 **There is no single pathway to an inclusive sustainable city**
 - The right to the city means that the people in each city will define their own vision and strategy for moving towards it; and
 - Ecologically regenerative and economically vibrant cities will be those with greatest receptivity to diverse cultures and viewpoints.

THE URBAN POTENTIAL-

THREE CITIES

LONDON
PHOENIX
RIO DE JANEIRO

Each city is fundamentally different, yet similar phenomena can be observed in many cities. The following portraits of three major cities of the world – London, Phoenix and Rio de Janeiro – are a proof of this. Created by the Canadian photographer Robert Polidori, the portraits focus on four clashes in the built and natural environment that are manifest in all cities throughout the world. These clashes do not merely determine the visual appearance and spatial organisation of any city, but also influence the ways that people inhabit and experience the city. In doing so, they exert a strong influence on the physical and psychological well-being of people in cities.

The term 'clash', in this context, does not denote something negative but, rather, both a challenge and a potential. As Charles Landry also argues in his article in this magazine, what matters in cities is not their infrastructure (or 'hardware') alone, but rather how citizens interact with this infrastructure and with each other. The potential of cities is huge, as they dispose of one of the most important, and virtually unlimited, resources available today: human beings and their ingenuity.

FOUR CLASHES

LIGHT VS DARKNESS



The role of natural daylight has rarely been discussed on an urban scale in the past. This was different in the time before World War II, when fossil fuels seemed less abundant and the reliance on antibiotics and other medical treatments to cure illnesses caused by lack of light was not yet as strong as it is today.

Yet in recent years there has been increasing evidence of how important natural light is for human well-being in both psychological and physiological terms. Moreover, with the rise of solar energy, and the development of plans to harness it on all scales, the relationship between cities and the sun has become of interest to urban planners once again.

Key questions

- How is the built structure of the city, including its open spaces, arranged to let in the sun or block it out?
- How does the city, with its buildings and open spaces, relate to the direction of sunlight?
- Where and on what occasions does the city 'take in' the sun, and where and when does it provide shade?
- Where are the dark sides of the city? At what times are they dark?
- How are places of light and places of darkness distributed in the city? What purposes do they serve?
- Where in the city are there places of stark (light/dark) contrast, and where are there places of subtle, shaded nuances?
- How do the inhabitants relate to these places?
- How do rhythms of light and darkness influence the routines of the city and its inhabitants?
- How do people and buildings in the city adapt to changes in daylight/sunlight intensity?
- How do the surfaces and volumes of the city harness the sun and its light to benefit people's lives?
- Where does the potential of daylight and sunlight remain unexploited in the city so far?
- How and where is solar energy used within the city?

HORIZONTALITY VS VERTICALITY



A city's relation to verticality and horizontality is influenced by numerous factors: prices of land, zoning laws, socially and culturally accepted levels of density, and the individual demand of private living space. Whether a city is organised vertically or horizontally – or both – influences the way that people move about in the city, their ways of interaction, and the intensity of use of horizontal and vertical surfaces.

Key questions

- What is the main orientation of the city and its structures – horizontal or vertical, or both?
- How are different functions and spaces in the city 'stacked' one above the other, and how does this influence their use?
- How, and at what speed, do people move between these spaces?
- How does the topography influence the city's specific relation between horizontality and verticality?
- How is the 'gaze of the observe' guided within the city – up and down, sideways, along prominent axes and big boulevards, or losing itself in labyrinths of small lanes and alleys?
- How and where does the city grow (vertically and/or horizontally) and how is this growth organised?
- How does the vertical or horizontal orientation of buildings and spaces influence people's everyday life?
- How does the verticality or horizontality of the city influence the availability of daylight and sunlight?
- What functions are the horizontal and vertical surfaces of the city intended to fulfil, and how are they used in real life?

OPENNESS VS CLOSEDNESS



Until the Middle Ages, cities used to be more or less 'closed': in spatial terms, by means of city walls and fortifications; and in social terms, by means of class differences and other social barriers. During the last 4-5 centuries, this paradigm has shifted towards more openness and deregulation – spatially, the 'endless' city grid has become the organisational model of many cities.

Key questions

- Where are the boundaries between different areas within the city?
- How visible are they, how can they be recognised as such?
- How permeable are they, and how do people interact across them?
- How visible and how permeable is the boundary between the city and its surroundings? Does the city have a clear outer edge?
- Where does the city provide protection and privacy? How clearly is private space separated from its surroundings?
- How permeable are the boundaries (i.e. the roofs and facades) of buildings in the city? How are interior and exterior space separated?
- What is the role of openings (in buildings, between different areas within the city)?
- Do the citizens lead more of an 'interior' or 'exterior' life style? And in what interior or exterior spaces does the urban life concentrate?
- Where, and how, are open spaces and nature integrated into the city?

SURFACE VS VOLUME



The life in a city condenses on its surfaces. The surfaces can thus be compared to an 'open book' on which to 'read' the culture of a city. Surfaces act as barriers, but also as places of interchange; they are characterised by overlapping, and often competing, uses. People also have an intimate, often emotional, relationship with the surfaces in a city: the little patch of private garden behind their home; the facades they pass by on their way to work; the doorknob they touch when entering a building.

The volumes between these surfaces – whether on buildings or open spaces – have a less visible, but often even greater, influence over human quality of life. They determine the scale and 'grain' of the city, they contain the space that each citizen inhabits and the air that every person breathes. How a city's volumes relate to human beings and human scale of a city, on the other hand, and the spaces inside and around them, determines to a large extent whether people feel at home in a city or alienated by it.

Key questions

- What is the dominant feature of the city (or a specific part of the city) – built volumes or large open spaces?
- How densely are volumes packed together on a city surface, what scale do they have, and how does this affect human quality of life?
- What scale do surfaces and volumes have in the city; how do they relate to the scale of the human body?
- How do people interact with the surfaces of the city? How does this change over time, during day and night?
- How do the surfaces of the city interact with daylight at different times of the day?
- How are the skyward-oriented surfaces of the city (especially the rooftops) used?
- What are the most prominent surface materials (and surface 'qualities') within the city? What sensual and tactile quality do they have?
- Where do you see unused potentials of surfaces in the city?
- To what extent do different functions and uses overlap on certain surfaces, and what effects does this have?

URBAN PANORAMAS

London



Phoenix



Rio de Janeiro




LONDON

ECONOMY

Growth

Population: 7,825,000 (2010 estimate)

Population growth per hour: 8.3 persons (2001-2010)

 7,825,000

Overall size of the economy (2008): US\$ 565 billion
5th-largest city economy in the world.

Economic opportunities

Number of international visits to the city: 14,059 million (rank 1 worldwide) (2009)

Unemployment rate (Feb 12): 10.1%

ENVIRONMENT

Environment & resource consumption

Population density: 4978 km²
Average household size: 2.37 persons (average figure for the UK, 2010)

Ecological footprint per person (2002): 6.63 ha
CO₂ emissions per capita: 5.9 t

Natural asset base

Area: 1570 km²
Sunshine hours per year: 1460

Area of public green spaces per person (2009): 34 m² (= 16% of the city area)



Area of private gardens per person: 51.2 m² of which approx. 30 m² are vegetated (2009) (= 24% of the city area)

SOCIAL CONDITIONS

Health

Life expectancy in years (2010): 78.6 (men)
83.1 (women)

Percentage of women who breastfeed their babies: 83.2%

Percentage of women who smoke during pregnancy: 7.5%

Security and opportunity

Human Development Index: 0.863
Average figure for the UK, 2011

Corruption Perceptions Index: 7.9
Average value for the United Kingdom, 2011 (0 = highly corrupt; 10 = very clean)

Ranking in the Mercer's Quality of Living Ranking (2011): 38th

Political Stability and Absence of Violence Index: 0.56
Average value for the United Kingdom, 2008 (-2.5 = worst governance, 0 = average, 2.5 = best governance)

51°30'27" N
0°01'16" W
Robert Polidori
London 2012



GDP (gross domestic product), adjusted for Purchasing Power Parity (PPP): **US\$ 65,900**

Number of cars per 1,000 inhabitants (2010): **379**

Poverty rate:
 overall: **28%**
 among children: **40%**
 among working-age adults: **23%**
 among pensioners: **29%**

All figures from 2009. Percentages are based on a poverty line of 60% of the national median income. This is equivalent to £/person/day for a childless couple, and £/person/day for a family with two children.

London: an international city
 More than 300 languages are spoken within the city limits of London according to recent estimates, and there are almost 100,000 foreign students in London. The British capital is also the world's most visited city, attracting 14.059 million foreign visitors in 2009. Tourism is a major industry in London, employing the equivalent of

Number of residents aged 16–70 with higher qualification (A levels or above): **31%**
 lower education (GCSE levels or above): **40%**
 no qualification: **24%**
 Figures from 2001

350,000 full-time workers in the city. However, tourism also adds to the city's ecological footprint: according to a 2002 study, the ecological footprint London grew by around 5% if the activities of tourists visiting the city are taken into account.

Sources: Wikipedia; City Limits London study 2002, <http://www.citylimitslondon.com/>

Number of pupils per teacher in primary schools: **22.8**
 in secondary schools: **16.5**
 Figures from 2007

Amount of household waste: **382 kg/person/year**
 906 kg per household

(Household) water consumption (2008): **167 litres/person/day**

Modal Share (all trips; 2010):

Public transport (including taxi): **42%**
 Walk: **21%**
 Cycle: **2%**
 Motorcycle: **1%**
 Car: **35%**

35% 21% 2%



Total area of green roofs (2009): **approx. 500,000 m²**
 = 0.065 m² per person

Number of street trees in London (approx.): **500,000**



A city with a large footprint
 In 2002, the total ecological footprint of London was 49 million global hectares, an equivalent of 6.63 global hectares per person. That year, London's ecological footprint corresponded to:

– 42 times the biocapacity of London
 – 293 times the geographical area of London
 – twice the size of the UK
 – roughly the size of Spain.

Source: City Limits London study 2002, <http://www.citylimitslondon.com/>

Percentage of 16–24 year olds who reported taking drugs: **16.8%**
 13.6% cannabis, 4.5% cocaine, 2.2% ecstasy, 1.2% hallucinogens, multiple answers possible

Percentage of teenagers who become pregnant each year: **4.4%**

Percentage of 5–15-year-olds who meet the recommended fruit and vegetable consumption level: **24%**

Percentage of children who achieve the recommended level of physical activity (i.e. one hour of exercise each day): **28.5%**
 33% of all boys and 24% of all girls

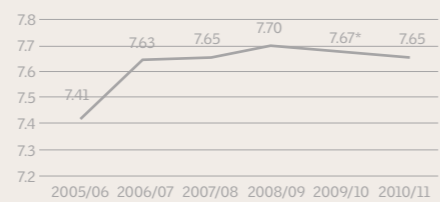
Percentage of 6th-year pupils who are at risk of obesity: **21.3%**
 36% are at risk of being overweight

Homicide rate per 100,000 residents (2011): **1.3**

Londoners are three-quarters happy
 Since 2005, London's citizens have regularly been asked how happy they feel, in a rating of one to ten. The results have consistently been in a range between 7.4 and 7.7 ever since, with the lowest result in 2005/06 and the highest in 2008/09, the year of the financial crisis.

*No data for 2009/10. Figure presented is the average of results in years either side.

Average happiness score for London
 Taking all things together, how happy would you say you are?

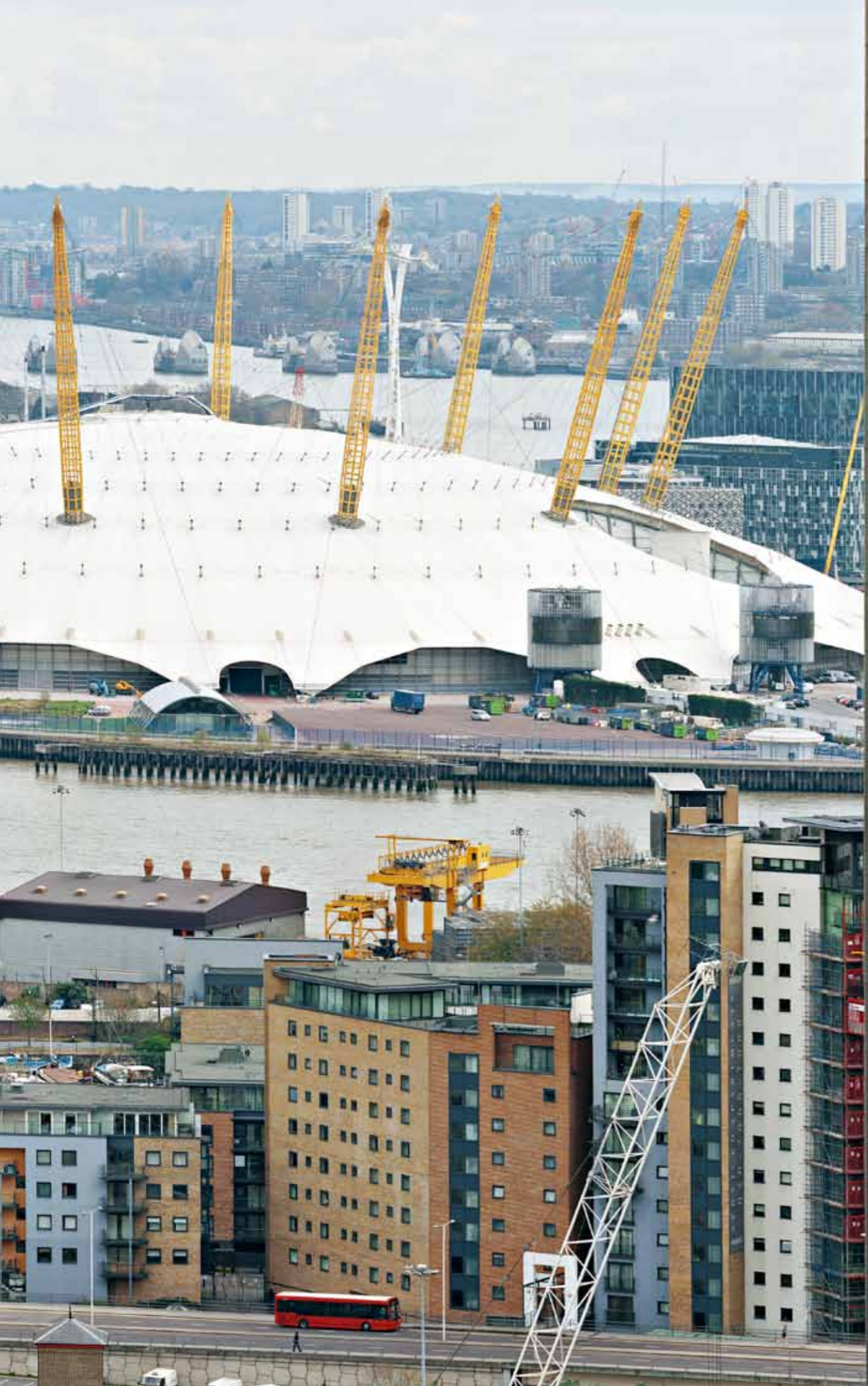














Isle of Dogs
Canary Wharf
A1206
Blackwall Tunnel
(A102)

Tilbury (A13), Leamouth A1281
Royal Docks, City, ExCel (A1020)




PHOENIX

ECONOMY

Growth

Population (2010):	1,445,632	Population growth per hour:	1.42 persons
(Metropolitan area):	4,192,887	(2000-2010)	

 1,445,632

Population change since 1990 :	+65.43%
Population change since 2000:	+23.07%

Economic opportunities

Percentage of population over 25 with completed high school education:	81.54%	Number of pupils per teacher in schools:	16.4-22
some college education:	23.78%	Depending on school district (2003/2004)	
Bachelor's degree or higher:	17.88%	Funding per pupil:	US\$ 4,980-\$8,304
Post-graduate degree:	8.86%	Depending on school district (2003/2004)	

(All figures from 2010)

ENVIRONMENT

Environment & resource consumption

Population density (2010):	1,080/km ²	Ecological footprint per person:	8.0 ha
		(Average figure for the United States, 2007)	
		CO ₂ emissions per capita:	179 t
		(Average figure for the United States, 2008)	

Natural asset base

Area:	1,338 km ²
Area of city parks per person:	13.2 m ²
Area of desert parks and preserves per person (2011):	107.7 m ²

Living on the streets?
The total accumulated length of streets in Phoenix is 7,795 km. Theoretically, every resident of Phoenix thus indirectly 'owns' 5.40 metres of street, or (at an estimated average street width of 7 m) around 38 square metres of street area.
(Source: <http://phoenix.gov/citygovernment/facts/stats/general/>; http://en.wikipedia.org/wiki/Phoenix,_Arizona)

SOCIAL CONDITIONS

Health

Life expectancy:	77.8 years	Number of beds in hospitals:	> 8,000
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Security and opportunity

Human Development Index:	0.91	Corruption Perceptions Index:	7.1
Average figure for the United States, 2011		Average value for the United States, 2011 (0 = highly corrupt; 10 = very clean)	
		Political Stability and Absence of Violence Index:	0.59
		Average value for the United States, 2008 (-2.5 = worst governance, 0 = average, 2.5 = best governance)	

33°19'50" N
112°03'40" W
Robert Polidori
Phoenix 2012



Overall size of the economy (2008): **US\$ 200 billion**
31st-largest city economy in the world

GDP (gross domestic product), adjusted for Purchasing Power Parity (PPP): **US\$ 47,700**

Unemployment rate (Feb 2012): **7.8%**
Poverty rate (2009): **21.1%**
Poverty rate among children: **30.5%**
Percentage of residents below 50% of the poverty threshold (2009): **10.2%**
The US poverty threshold is 15.76 US\$/person/day for a family-of-four household, or US\$ 31.48/person/day for a single household

Number of cars per 1,000 inhabitants: **828**
Average figure for the United States 2009

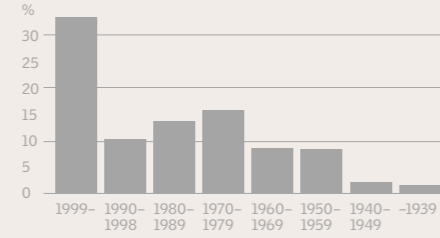
Number of cars per household: **2.1**
Number of persons per household: **2.8**

A recent housing stock

The young age of Phoenix can also be seen in the housing stock of the city. Of the slightly over 600,000 housing units in Phoenix, 35% were built after 1999. Today, Phoenix has a density of around 370 dwelling units per square kilometre, or 37 dwelling units per hectare. Around 61% of all homes were owner occupied, and 39% rented.

Age distribution of housing stock:

Sources: <http://www.city-data.com/city/Phoenix-Arizona.html#ixzz1n801Mr51>; http://www.clrsearch.com/Phoenix_Demographics/AZ/Housing-Statistics-Occupancy-and-Year-Built



Amount of household waste (expected for 2012): **726.6 kg/person/year**

Modal share (trips to and from work) (2000)

By car: **89.1%**
By public transport: **3.3%**
On foot: **2.2%**
By bicycle: **0.9%**
Others: **1.1%**
Work at home: **3.3%**

89.1% **0.9%**



Sunshine hours/year:

3,876



Sunny Phoenix

Phoenix is considered to be the city with the highest average sunshine amount (85.4%) and the highest number of days clear of clouds in the United States; the skies are clear 59% of the time, partly cloudy 22% and cloudy 19%. Annual rainfall is about 22 cm, which makes

Phoenix one of the 25 driest cities in the country. The average daytime temperature in summer is over 32°C

Sources: <http://www.city-data.com/top2/toplist2.html>; <http://phoenix.about.com/cs/living/a/PhxFastfacts01.htm>

Adult diabetes rate: **7.7%**
Adult obesity rate: **22.5%**

Daily nitrogen dioxide (NO₂) levels in outdoor air: **18.5 ppb**
Daily particulate matter (PM₁₀) level: **32.5 µg/m³**

18.5 ppb

32.5 µg/m³

Homicide rate per 100,000 residents: **7.6**
Robberies per 100,000 residents: **210**
Vehicle thefts per 100,000 residents: **500**
All figures from 2010

Quality of life in Phoenix

Phoenix offers approximately 75% more quality of life than the average US city or town. This is the result of the Quality of Life Index of the real estate Internet platform CLRsearch, which evaluates the quality of life in cities based on an Internet opinion poll. According to this index, the desert metropolis offers particularly good

culture, education – and weather. It is also reputed for having a significantly lower mortality risk. On the other hand, people in Phoenix tend to be slightly less religious than the average US citizen.

Source: http://www.clrsearch.com/Phoenix_Demographics/AZ/Quality-of-Life





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ECONOMY

Growth

Population (2010):	6,320,446	Population growth per hour (2000–2010):	5.35 persons
Metropolitan Area:	12,387,000		

 6,320,446

Economic opportunities

Percentage of total population living in favelas (2008):	18.7%	Number of international visits to the city (2009):	2.698 million <small>(rank 38 worldwide)</small>
Poverty rate (people living on less than 2.75 US\$/person/day) (2008):	10.18 %		
Poverty rate in the favelas:	15.1%		

ENVIRONMENT

Environment & resource consumption

Population density:	5,036 pers/km ²	Amount of household waste (2009):	525 kg/person/year
Ecological footprint per person:	2.9 ha <small>2007; average figure for Brazil</small>	Garbage collection rate:	
		in the favelas:	67%
CO ₂ emissions per capita:	2.1 t <small>2008; average figure for Brazil</small>	in the rest of the city:	92%

Natural asset base

Area:	1255 km ²
Percentage of the city classified as natural areas (1998):	53.7%
Sunshine hours/year:	

2085



Rio's natural potential
With 58 m² per person, Rio has an impressive amount of green spaces. The largest of these are the Pedra Branca Natural Park and Floresta da Tijuca, two of the largest urban forests in the world. For the 2016 Olympic Games, the city is planning to create a new green corridor in the residential areas, lined by 11,000 trees, around its

SOCIAL CONDITIONS

Health

Life expectancy (2007):	73.1 years	Total number of hospital beds (2009):	
		(=one per 305 inhabitants)	

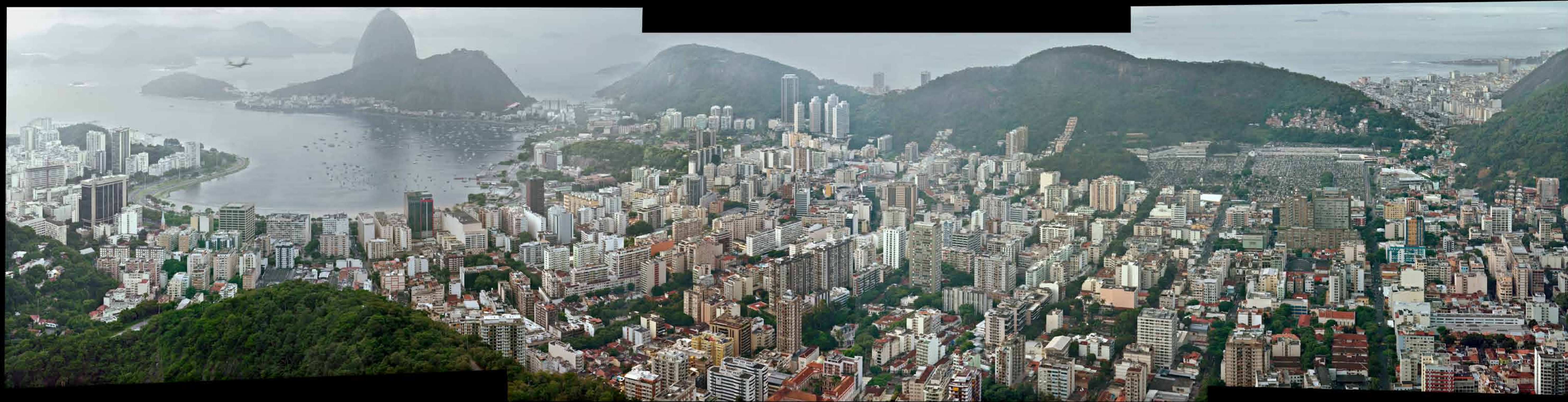
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Security and opportunity

Human Development Index (2005):	0.832	Ranking in the Mercer's Quality of Living Ranking (2011):	114th
Corruption Perceptions Index:	3.8 <small>2011; average value for Brazil (0 = highly corrupt; 10 = very clean)</small>	Homicide rate per 100,000 residents (2010):	approx. 30
Political Stability and Absence of Violence Index:	-0.12 <small>Average value for the Brazil, 2008 (-2.5 = worst governance, 0 = average, 2.5 = best governance)</small>	Literacy rate among population over 15 years of age (2010):	97.1%

22°56'42" S
43°11'47" W
Robert Polidori
Rio de Janeiro 2012



Overall size of the economy (2008): **US\$ 201 billion**
30th largest city economy in the world

Average GDP growth (2003–2008): **3.3%**
Official unemployment rate (September 2011): **5.7%**

Number of cars per 1000 inhabitants (2010): **252**

GDP (gross domestic product), adjusted for Purchasing Power Parity (PPP) (2009): **US\$ 16,900**

Pupils per teacher: **23.7**
in elementary schools:
in high schools: **16.4**
(all figures from 2009)
Average years of schooling for children: **6.6 years**
in the favelas:
in the rest of the city: **9.9 years**

Standards of living

Nowhere in Brazil is the clash between wealth and poverty as palpable as in the country's two major cities, Rio de Janeiro and Sao Paulo. At the top end of the price range, apartment prices in Ip-anema, one of Rio's most expensive districts, rose by 36% in 2011 to an average of US\$ 8,200/m². According to Mercer's city rankings of cost of living for expatriate employees,

Rio de Janeiro ranks 12th among the most expensive cities in the world in 2011, ahead of London, Paris, and New York City. At the bottom end, there are 32,000 households in Rio who earn less than one quarter of the official minimum wage, i.e. less than 2.05 Euro a day.

Sources: 2010 Population Census of Brazil; http://en.wikipedia.org/wiki/Minimum_wage_law#Brazil; <http://www.globalproperty-guide.com/Latin-America/Brazil/Price-History>

Share of wastewater treated (2008): **85.3%**
(Household) water consumption (2008): **303 l/person/day**
Percentage of electricity that comes from renewable sources (primarily hydropower): **88%**

Modal share (all trips, 2003)

On foot and by bicycle: **37%**
By private motor vehicle: **16%**
By public transport: **47%**

16% 37%



port. Moreover, Rio's climate change action plan calls for the reforestation of protected areas. To achieve this, it has undertaken a US\$ 15 million programme that involves planting 1,500 hectares of new trees in the city.

Source: Siemens AG/The Economist Intelligence Unit: Latin American Green City Index, 2010

Water supply

At (officially) over 300 litres per person per day, Rio's water consumption is rather high. This is mainly due to the fact that 58% of all water is lost through 'leakages' in the system. However, this includes not only leaking water pipes but also illegal connections to the water system in many areas. The benefit of this is that, officially,

over 98% of all residents of the city have access to potable water. An estimated 83% of Rio's residents have access to sanitation, and around 85% of all the wastewater in the city is treated.

Source: Siemens AG/The Economist Intelligence Unit: Latin American Green City Index, 2010

Share of population with access to potable water (2007): **98.4%**
Share of population with access to sanitation (2007): **83.4%**

Daily nitrogen dioxide levels in outdoor air (2009): **57.7 µg/m³**
Daily level of suspended particle matters (2009): **24.0 µg/m³**



Health and crime

Rio de Janeiro's population consists of 46.8% men and 53.2% women. This discrepancy is attributed to the high violence rates among young males, in particular. On average, the life expectancy of Rio's men is 8.8 years shorter than that of women. Between 1978 and 2000, Rio lost almost 50,000 people to homicides, particularly in fights between rival gangs of drug traffickers, and between these and the police. However,

the homicide rate has decreased by 50% since its peak in 2002, and now stands at around 30 per 100,000 inhabitants per year. This is still high, but not higher than in some North American cities such as St. Louis, Detroit and New Orleans.

Sources: 2010 Population Census of Brazil; Janice Perlman: Favela. Four Decades of Living on the Edge in Rio de Janeiro, 2010; http://www.chinadaily.com.cn/world/2008-12/02/content_7261219.htm; <http://www.rio-de-janeiro-travel-information.com/rio-de-janeiro-safety.html>

Greatest fears in Rio de Janeiro

36% Stray bullets	2% To be struck in traffic
23% Getting mugged	2% Soccer fan fights
19% Going out at night	1% Crowds
7% Presence of drug gangs	1% Flooding
4% Being stopped by police	1% Bus, Train, Metro
4% I do not feel fearful	

Image source: <http://riocrime.wordpress.com/2009/11/22/survey-greatest-fears-in-rio-de-janeiro/>





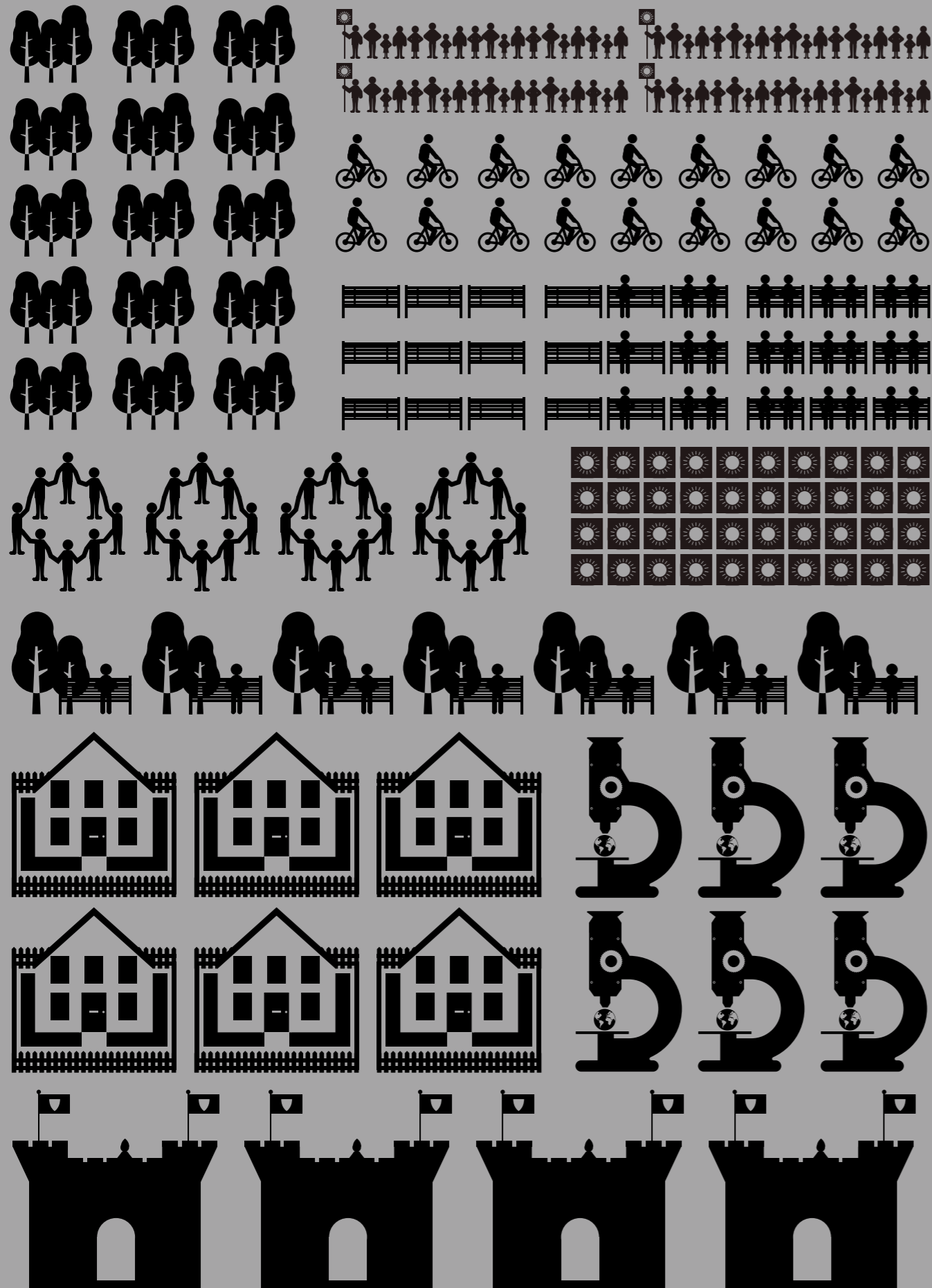












MAN AND THE CITY— POWER TO THE PEOPLE

People are migrating from countryside to city. We seek the thrill, the unexplored, the primitive and the alien that nature used to give us, between houses, streets and each other. By the middle of this century, seven in ten people across the globe will be city-dwellers. In other words, we are evolving into an urbanised species. This makes demands on the city – and on its inhabitants; it calls for mutual respect and cooperation, for responsibility and technological innovations, for mental adjustment, new values, empowerment and enlightenment. Without sustainability, it's not going to happen.

A dialogue on cities, sustainability and the presence of history between Professor of Philosophy Ole Fogh Kirkeby and Climate Director Per Meilstrup.

Illustrations by Robert Samuel Hanson

THE TWO MEN meet in the heart of the city, on Copenhagen's Langelinie waterfront overlooking the green ramparts of Kastellet, the Little Mermaid and the water and rocks around her, the Port of Copenhagen and the former industrial buildings, storage areas and grey chimneys of Refshaleøen.

Ole Fogh Kirkeby takes a seat with his back to the light. He has to have the light behind him, he can't be doing with anything else. And Per Meilstrup kicks off:

Professor Kirkeby, when talking about sustainability today, we are referring to the relationship between man, culture, society, economics and nature. How has the term sustainability come to be bound up with environment and economics?

OLE FOGH KIRKEBY: I think that's just the construct embodied by the term. It's the original sense that was reappropriated as a technical term. To sustain: to support from below, derived from "sub" as in "from below", and "tenere" to "hold". I see it as someone that has crept under something heavy and is taking the weight of it on his back. Like the image of the Greek Titan Atlas shouldering the celestial orb. And what we all should be shouldering is the globe. I'd say that this is the metaphor the originators of the term had in mind. PM: *I also find when talking to Americans and Brits that they use the word sustain about the environment and environmental awareness in a way that recalls its true sense. That it really means to sustain society, as in to keep it held up.*

But sustainability was institutionalised as a political framework in the mid-80s, when Gro Harlem Brundtland wrote her famous report and the UN appointed a sustainability commission, and since then we've had many years' debate on the three pillars of sustainability – economics, environment and social conditions. Yet now, as we lean back and think about what it actually means, have we perhaps forgotten the ultimate goal behind the term? These days

... as I see it, we can't take sustainability on board without also taking on board the legacy of history and social rights – as in fundamental freedoms."

it's all about wind turbines, water treatment plus a bit about LDC development, but the ultimate goal was surely for the three pillars to come together and produce quality of life? Surely the ultimate goal of sustainability is to create quality of life for the individual in harmony with society?

OFK: I find the QoL concept a bit of a problem because it masks the word happiness – and I'm not blind to the fact that for the founders of Western Culture, the Ancient Greeks, happiness was their ultimate goal...

PM: *...but is sustainability not a bout the pursuit of happiness?*

OFK: I prefer the word freedom. In this day and age, in the last analysis, freedom matters more as a concept than happiness. This is bound up with the evolution of Western society, our culture of modernity as it's called – a tricky term to understand, since modernity starts with the Baroque Age, and it may be difficult to see the connection between 'the modern' and 'the baroque' in its derogatory sense of over-elaboration and excess – yet in the Baroque Age, people were struggling for civil rights. It took a very, very long time, but it started with the question: what is my fundamental right? This is made up of my personal rights, the inviolability of my own person, of my family and of my property. And these are what society must protect. This is why we have a society. If the sovereign power can assure that, then we accept him, otherwise we sack and lynch him, as proposed by Spinoza in his Theologico-Political Treatise in the 1600s, and later cemented by the British philosopher John Locke. With the Enlightenment, civil rights were slowly acquired, that is, as Habeas Corpus, a fundamental legal principle in a constitutional state that says you cannot be detained without a sentence, and that no one can simply make off with your possessions. In the 1800s, political rights were slowly won, followed after World War II by social rights – the left wing and right wing came together to declare that if people, through no fault of their own, are down on their luck – lose their job, fall sick – then state intervention to protect them is a RIGHT. So, as I see it, we can't take sustainability on board without also taking on board the legacy of history and social rights – as in fundamental freedoms. Because the social rights prescribe that people cannot forfeit their freedom if they are

"Surely the ultimate goal of sustainability is to create quality of life for the individual in harmony with society?"

not themselves at fault, e.g. by attacking an individual or society.

PM: *So, you see our discussion on the societal dimension of sustainability as an extended evolutionary phase surrounding rights and freedom, happiness and justice? Have we then reached the point, given the challenges we face, where all the alarms and warning lights are flashing red, are we at the stage where the general global debate is about how to achieve sustainable development, whereas it once concerned civil rights and financial freedoms?*

OFK: Yes, I would say so. To put a negative spin on it, the sustainability issue has become the socialist horizon for the middle classes – an issue they can rally together around in the sense that if you mess up on that score, you'll feel the con-

"In this day and age, in the last analysis, freedom matters more as a concept than happiness. This is bound up with the evolution of Western society, our culture of modernity as it's called ..."

sequences yourself as well. It's dizzying to think about the freedom enjoyed by 19th century industrialists – true, the length of the working day was regulated in the 1850s, but until then, they could do as they pleased, assuming they had the means. It's very strange to imagine having that kind of scope. But little by little everything was brought under control and bound by statute, so the freedom enjoyed as an economic individual has been curtailed, while personal freedom in the private domain lives on, and that's the freedom that counts now.

PM: *But personal freedom to do as one pleases is still alive and well, even if it's invisible. We haven't yet managed to organise society in such a way as to prevent carbon emissions and all the other pollutants from belching out of the chimneys. Releasing CO₂*

"To put a negative spin on it, the sustainability issue has become the socialist horizon for the middle classes."

and other pollutants into the ecocycle costs relatively little, but it undermines our sense of fellowship and damages our common values. There are no rules to prevent it – in a sense society condones it, saying it's fine by us if you want to empty your rubbish bin out of the window like that.

OFK: That brings me to the thought that the freedom we don't want to restrict for the individual as an economic individual – well, that actually restricts the freedom enjoyed purely as an individual in the sense that the destruction of nature is irreversible. Meaning that there are a huge number of things we can't do anymore that we could before.

PM: *Precisely. And while we're on the subject of terms, one of the most fascinating aspects of man's relationship with nature is the irreversibility of it – as you put it – and I believe it's incredibly important to keep reminding each other that some of the damage that's been done, and that we are being warned will happen, is indeed irreversible. If the rhino disappears, it will never return. Things are disappearing from our world and they can never be brought back. And this is presumably one of the burning platforms we are standing on.*

OFK: You may well be right, but that's a discussion about the very fundamental is-

sue of the relationship between the different variants of freedom, or you might say, conceptual aspects – a discussion about negative and positive freedom. Negative freedom means that there are things you have to refrain from doing for the common good and your own integrity, while positive freedom denotes all the things you are allowed to do within the boundaries of positive freedom, as in the freedom to do everything that lets you expand your horizons – and that positive experience is the one that has gone and been absorbed into the negative freedom. It has gone. And there are all kinds of things that are slowly disappearing from our world, and I believe that sustainability is about understanding where we are in this balance between positive and negative freedom. The concept in moral philosophy of the impartial spectator, that is, the idea that if such a spectator existed he could be the arbiter of moral conflicts; indeed, this spectator might tell us where the border lies between our negative and positive freedom. He might ask: would we stand to benefit from beholding a rhino? Would our children gain anything positive from that? Or what can be thrown into the scrapheap of history without any loss, and what is important to preserve? And based

"... I believe it's incredibly important to keep reminding each other that some of the damage that's been done, and that we are being warned will happen, is indeed irreversible."

on what criteria? It is interesting to consider the criteria an impartial spectator might apply.

PM: *Was the extinction of the dodo a loss to us?*

OFK: Or if we couldn't sit under a birch tree anymore? Many people might say that was a loss. I personally love sitting under a birch tree.

PM: *To my mind, one of the most fascinating discoveries at the moment is what is called the Anthropocene. We are all familiar with the earlier geologic periods the planet has passed through – the Cretaceous, Jurassic periods and so on, and for centuries now we've been living in the Holocene Epoch, but leading researchers are now saying that we are entering the next epoch, that is the Anthropocene, the epoch in which mankind has the most decisive geophysical impact*

on the planet. It's a concrete fact that humanity is now the main impact factor on cliffs, soil, sea currents, ecosystem cycles etc. It's a striking thought, and a huge difference from earlier geologic periods. That's the epoch we are entering now. But I doubt if we've actually realised that yet.

OFK: So do I. But there's also a strange dilemma in there; because on the one hand we are well aware that all the things we do have major impact, e.g. we were perfectly aware of that in our nuclear testing, and we know that there are huge islands of plastic floating around in the Pacific, but then we shrug it off with the idea that the planet is so big it probably won't matter. But on the other hand we are shocked at how small the planet is in relation to the universe! There's always a strange duality to it.

PM: It's clearly a difficult thing to acknowledge.

OFK: It's so fragile, is it not? And I think that sense of fragility strikes us, not least when we find we can't control the world as much as we once thought. It's interesting to think about the famed and disastrous earthquake in Lisbon – I believe it was in 1755, and the German author and philosopher Goethe, who was about five at the time, later recounted that in an instant birds and all things fell silent, but nobody knew what had happened because Goethe was thousands of miles away from Lisbon and news of the quake didn't reach them until many days later by stagecoach. The earthquake occurred in the sea a few

... but then we shrug it off with the idea that the planet is so big it probably won't matter. But on the other hand we are shocked at how small the planet is in relation to the universe!"

hundred kilometres off the coast, and created a tsunami. But now they are trying to do surveys out at sea so they can issue alerts before it happens again. Because it will happen again. Many years before the destruction of Lisbon, there was a yet another tsunami, which was even bigger and swallowed up a large number of the Canary Islands. This is alarming because man suddenly realises that the planet can go to pieces. Things happen. The world is fragile.

PM: What does it do to us? What does it do to our consciousness?

OFK: On the one hand we definitely don't feel omnipotent. We feel deeply dependent on our planet, and I think in a sense also feel responsible for it. It's a mixture; we can't control the evil forces of the earth, but we still have to watch out because it will take almost nothing for it to explode. The whole thing is so sensitive.

PM: Katherine Richardson, Head of the Sustainability Science Centre at the University of Copenhagen, likes to say that one of the reasons why we have so many discussions about sustainability is that it – maybe for the first time since Darwin – asks the question: what is our relationship with nature? Darwin's theory that man is descended from the apes made people wonder if the slaves they owned were actually human beings, and basically, every aspect of our civilisation and economy was questioned. And it's the same basic tension in the debate going on today.

"If we go back to the Indo-European era, or at least to the first written legacies, cities are ascribed two purposes: one defence, one ritualistic. ... Walls are needed. Obviously."

OFK: That may well be true, but I doubt many people believe in Darwin's theory. We don't see it when we look in the mirror in the morning. So we don't really believe we could be descended from the apes.

PM: But you recognise the argument that we are forced to decide where we stand in our relationship with nature?

OFK: I do. We have a need to feel that we are at one with nature. In former times, we could score out the idea that we were at one with nature or natural beings, while feeling that we held sway over nature, but in becoming so terribly dependent on nature, we have also become at one with nature in a fatal way. A product of nature in a fatal way. And I think that's an uneasy experience. It is also an experience that draws closer when you, as I have, reach 60, or 65 say, and discover your own mortality. I have just read Simone de Beauvoir's essay *The Coming of Age* (*La Vieillesse*), and she wrote it when she was 62, and refers to everyone over 60 as geriatrics. She describes a number of famous people and their views of old age, and those worst affected are scientists because they come to a standstill after the age of 50, while painters fare best because they can carry on working and creating – even blind Goya painted.

The shock of old age – the recognition that you will not live forever – is a strong parallel here. Like the parallel taught by Christianity of ashes to ashes and dust to dust, as a harsh reminder.

PM: We look back through history and one of the reasons why we talk about man and the city is that we have increasingly become an urbanised species. If we go right back, we have gone from a nomadic existence to settling, cultivating the land, becoming permanent fixtures and building communities and urban settlements. Today more than half the world's population lives in an urban community – we passed the half-way mark in 2007 or 2008, and migration ap-

"... The shock of old age – the realisation that you will not live forever – is a strong parallel here."

pears to be continuing. I see it as a linear development, but is this migration going to continue infinitely?

OFK: If we go back to the Indo-European era, or at least to the first written legacies, cities are ascribed two purposes: one defence, one ritualistic. Religion belongs here, and religion must always be protected against other religions and other religions' rulers and crusaders. Walls are needed. Obviously. In English we have the words "city" and "town", and they mean almost the same, a settlement or a dwelling. The old word is "borough", from old English "burg", and we know that from German "Burg", and from Danish "borg". A town or a city must be a "burg", i.e. a castle built in order to yield protection against the lord, because it was the refuge, or stronghold, to which serfs and craftsmen had escaped. The word "castle" derives from Latin "castellum", "a fortified village", from Latin "castrum" "fort". If the "burg" had not existed, then commerce and, hence, industry would not have been possible at a broader level. Without the walls of the castle, the European culture would not have been possible. That is why the city was so important.

PM: It's interesting to consider that our migration started out in the direction of food and a better climate, and now we are

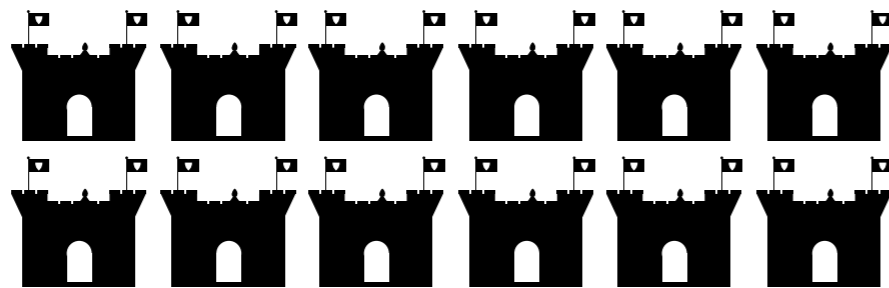
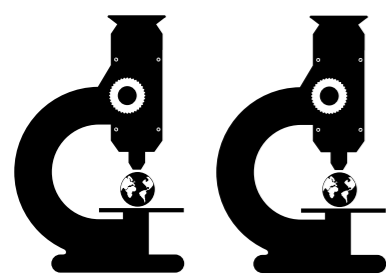
headed for the city. In 50 years' time, seven in ten people will presumably live in urban communities. So we have turned into a species that lives in very large communities, all in one location. That migration from rural to urban area down the millennia – what does it do to our consciousness? Does it change us and our entire way of life, or are we still fundamentally the same?

OFK: That's an interesting thought – because one would imagine that people who live in the country, really in the country, and not as commuters, although some of the effect probably also rubs off on them, have a different perception of time, light, nature and of each other than city-dwellers do. You would imagine that people living in the country, whose living conditions are radically different and who lead more isolated lives than people in the city, would develop a different consciousness. And I believe they do when it comes to politics but also when it comes to our innate sense of time. What is currently referred to as cultural acceleration, of being haste-driven, of wanting to speed up all the time, one would imagine this mentality exists less in rural areas, since people there clearly have no reason to be caught up in any acceleration, they don't even need to wear a watch, which means that time sits differently with them in some way.

Neither do they need the differentiated language that goes with all the new professions and their expertise – except when it comes to terms for the natural world and natural phenomena, for which they have a highly differentiated language and a font of experience which is altogether absent in city-dwellers.

PM: Like the myth of the famous 18 words for snow in Greenland?

OFK: Yes, in the country, everyone has words for plants and animals. But not, perhaps, for their contact with other people, where they acquire more stereotypical impressions because they don't see the same diversity of people – and we must face up to the fact that humans have been socialised by a religion that has produced stereotypical human images – not necessarily incorrect human images, but, the Seven Deadly Sins and their associated vices, for instance, and the fact that religion overwinters longest in the country. They are pretty simplistic. We live by them ourselves, and as city-dwellers make judgements based on them even though we try to wriggle out of them and stand up to them. In rural areas there is clearly no incentive to stand up to those images – not that people in rural areas have no vices, they no doubt do, but they are judged in cruder terms. Besides which, people know



"Looking at my fellow-men, I think they live by a profoundly humanistic, Christian set of values."

each other from very pragmatic settings, as in barter deals, which don't perhaps make for the most enriching acquaintances, and in that way different types and horizons evolve. In the country, there's no incentive to play around with concepts or any incentive to invent new modes of entertainment or experiential or philosophical modes. This is why people who have advanced a rationale – of whatever kind – anything from art to science – have always left the country. And then naturally, because they belonged to the elite, retained both options – both of the city and country, which is ideal because then they are not held down by the millstones of a single way of life.

PM: *So Henrik Pontoppidan's novel about Lykke-Per's [Lucky Per] journey from North Jutland to Copenhagen is a narrative of our culture and economy?*

OFK: Yes, people are drawn to the city where everything happens to gain recognition and professional status.

PM: *Cities are practical, logistical places, where people live cheek by jowl. And you are saying that this is how culture arises?*

"Supposing what we need is to trigger a mass green movement to take hold of every city in the world ... what would it take?"

OFK: Yes, at least, this is where conflicts arise; filters – communicational interest fields arise, where people have to translate their autobiographies, their personal histories into other people's realities. Membranes arise, vibrating between people, where translatability prevails.

PM: *I'd like to come back to what you were saying about people living in the country and their sense of time and acceleration.*

OFK: Time entered our culture with the factories. Time-keeping devices such as clocks, sundials and hourglasses began to emerge in the Middle Ages, while the pocket watch was a later invention of the Late Baroque period of the 16–1700s. Instruments for time-keeping have immense influence on our culture in that that they make time essential and critical. The full impact comes with the factories of early 19th century industrialisation. Factories were the first undertakings to require workers to turn up for work at a fixed time, and it takes a long, long time to learn to get to work on time. And to show up for work every day, even on a Tuesday after the three-day revelry of a village fête. The workers have to learn not to relate to each other during working hours, not to chuck the materials at each other or to pilfer, and they have to turn up on time and observe strict work discipline. The break with personal biological and emotional logistics is a long struggle and has to be drummed into people by force. In the Western European culture, time discipline is prepped and drilled in only one setting. In the military. Drill really comes into its own after the 1750s and eventually comes down to the last second of time & motion studies. Presenting arms is not just for show – but a demonstration that a procedure can be performed in precise, structured sequences. And this was the feat of precision adopted by the factories. Indeed, the

first factory managers, in the 1800s, were military men – this was where the factory headhunted their directors.

PM: *You also make the point that light is perceived differently in the country from in the city?*

OFK: In the country, light is perceived in a completely different way; it is experienced organically. The first setting in which people began to control and contain daylight was in church rituals. This was down to the great architects. But in the factories, functionalism runs to excess, because here there is none of Lucky Per's "servant of the light", but an attempt to be master of the light.

PM: *Looking at the evolution of the increasingly urbanised human being, then it may be seen to alter our relationships with each other, economically and culturally, and conflicts arise. Does urbanisation affect*

"... in the country, light is perceived in a completely different way; it is experienced organically."

our values? Our sense of what matters?

OFK: That's a very complex question, and opinion is much divided on it. Looking at my fellow-men, I think they live by a profoundly humanistic, Christian set of values. They are just not that keen to talk about it, but they judge themselves against those values. They are there, but have been covered up, functionalised. People have realised that in the last analysis this is for the best, because if you don't want to harm yourself this is how you have to behave towards others. This golden

"None of us want to lose ourselves. Not if you understand the question – and you lose yourself if you betray the values you live by."

rule basically entails Christian values, humanistic rules. End of story. There's just no god to give it a seal of approval, though common sense does. Obviously, the values have changed, in that, for one, people don't talk about them in the same way as in the past, that is, in a religious context, and in a religious context that was there in ALL contexts. Yet we still speak in a context that is religious and which we all recognise – we speak a humanistic, Christian language.

PM: *So sustainability, altruism and social responsibility are Christian values?*

OFK: These are basically ancient Christian values and tenets. That's not to say that people have lived by these values, only a very few deeply religious sects did that for a very few decades. Other than that, it's been a facade, and beneath it, there was no lack of greed, hate, lust and selfishness. And that's sort of how it is with sustainability these days. As practised by some holier-than-thou members of the Green movement.

PM: *The sense of religiousness and devout-*

ness you get when moving in very green circles – that's no coincidence?

OFK: No. We cannot live at all if we don't live for values. Every choice goes back to a value – otherwise it would just be arbitrary. Right from how you button your shirt in the morning, to how you wipe your backside – it all goes back to a time – to a value and a choice that was made. And that is one of the predicaments of values – if we want what we say to someone to carry any weight, we tag a value onto it.

PM: *So is articulating sustainability as something driven by economic interests a dead end? Is this fundamentally misguided? – do we need to revert to values as change drivers?*

OFK: I believe so. And although some might hold that we can discursively construct people on a pragmatic, functionalistic, dry level, that's not what counts for people in the long run.

PM: *So when starting this mass movement, which would definitely be a precondition for overcoming sustainability-related challenges, then it mustn't be driven by*

cost-benefit analyses, but by value-laden messages?

OFK: Yes. I would also say, and it may sound a bit odd, but what if you were to ask everyone you passed on the street this question: what would you rather lose – your money or yourself? Would you rather lose all that you own and your wife and children, or would you rather lose yourself? The answer is that they would rather lose everything but themselves. None of us want to lose ourselves. Not if you understand the question – and you lose yourself if you betray the values you live by. And everybody knows that.

PM: *That would mean giving the global eco-movement a real shove to get back on track because the tendency now is to use economic arguments for "doing something" – even among the more radical lobbyists. A consensus has been created that ultimately this is what counts. So is that wrong?*

OFK: I don't think anyone becomes an activist without relying on a set of values. So it's a question of PR and rhetoric. Because the activists believe that the people



"The word sensuality is also fostered by the city."

they are lobbying have to be tackled with economic arguments. And no doubt they do, but this is a strategic world, a pseudo-world. If we're talking about what really matters to people, then that would be values.

PM: *But supposing what we need is to trigger a mass green movement to take hold of every city in the world – and as I said, not before time either – what would it take?*

OFK: Again, I'm conjuring up historical examples and images, and as a very young student I wrote reams and reams about Karl Marx. So in that respect, I've done a lot on the materialistic, technological sides to the story, and later on also on the philosophical aspects. Based on that, I would say that the concept for the movement has to be non-class-specific, otherwise it won't appeal and it won't gain full popular support. All the major, decisive movements in history were non-class-specific and instead appealed to and mobilised all tiers of society. Like Protestantism in Europe – it took hold of every level from the peasantry to the nobility. Protestantism is an interesting movement because it created a colossal mental shift in whole populations. And that's the scale of what needs to be launched when it comes to a green movement. It also mustn't be bound up with certain classes by a specific interest as socialism was – which was another massive movement. A green movement would have to include the whole population.

PM: *What was it that made Protestantism so successful as a movement?*

OFK: It solved a problem: the problem being that before Protestantism, individuals were not permitted to relate to God – and that's what Protestantism allowed them. Luther said that everyone has the right to preach and expound on the Bible, and that made everyone a potential priest. Luther translated the Bible into German and brought it into people's homes – before then religious services were conducted in Latin. But now the Bible was addressed primarily at the individual, who thereby gained control of his or her own relation-

ship with the divine. The relationship with God became personal and was no longer communicated through a third party.

PM: *So that was empowerment, as it's called nowadays?*

OFK: Exactly! Empowerment covers it nicely. And that's what it takes to sell a new movement – empowerment. Not responsibility and moral obligation – that comes afterwards. It has to be sold to people as freedom. And that brings us to empowerment.

PM: *When we move to the cities – progress from being peasants to modern-day industrialised people, how does that affect how we relate to nature?*

OFK: To give you a trivial example, city-dwellers have never really been out in the dark. People who have experienced the dark in the countryside, driving a car at night and the headlights suddenly stop working – they get scared. Lost. In the city people can't be lost in pitch darkness, because they have each other for protection, that being the original purpose of the cities, of the safety in numbers. In the city we are each other's safeguard against nature – but there's an absurdity to that. Hegel, the German philosopher, is famous for the case he put for the other nature – the social side, our social nature. Human beings are social animals. And we find, strangely enough, nature in other people's personas and bodies, but also in their way of being civilised and uncivilised.

PM: *What you are saying here makes sense in the context of rural-urban migration, the social nature and civilisation.*

OFK: Yes, and the word sensuality is also fostered by the city. Because of course there is nothing sensual about the countryside, or rather there might be for a city-dweller, but sensuality replaces nature. Sensuality is the security nature levies on us in the city. In the city, nature comes out as sensuality on every level, in everything from building fronts to the way the light falls, to the colours, scents and odours of bodies. We have five senses, working intently all the time, and usually together. And I hold that those senses are united by our movement.

PM: *In moving from the country to the city, did we lose anything along the way? Is sensory perception in the city a substitute for being out and about in the natural world?*

OFK: I would say that our senses have been refined along the way. The term is

obviously extremely evocative for the senses – the better you are at thinking, the better you are at sensing. If not, you are thinking in the wrong way.

PM: *I was raised with a sense that we have lost our connection with nature, that it was forgotten in the process. A classic example being that we don't know where the meat in the chill cabinets comes from.*

OFK: In that sense I agree, but we clearly haven't lost our sense of or connection with nature in a broad sense, since nature is everything that surrounds us, which is why I used the expression 'the other nature'. Nature is also you – your hair, your skin, your flesh. The wood in the window frame, this is all around us, surrounding us and the more differentiated terms we acquire, the more we should learn to spot. Consider the fact that the Danish word for knowledge, 'viden' or the German 'wissenschaft' for science or even the English word 'wit' have the same root as 'video', as in Latin "I see". And the term is what makes it possible for us to see. To see and to say also have the same root. We can't see everything at once, but have to see things a little at a time, just as we cannot say everything at once, but a little at a time. Otherwise our discourse would have lasted half a second. It has to be elaborated on over time, in the discourse, and the better we become at elaborating, the better we become at separating, perhaps in the right way, but we see, perceive and sense a thousand times more because we have a more differentiated pattern of acknowledgement.

PM: *So the cliché that urbanites haven't a clue about nature, does not stem from the loss of anything in relation to nature, since it is around us all the time, but from the fact that we have lost some of the knowledge of how to grow crops, produce meat and how a combine harvester works?*

OFK: We have lost a body of knowledge that belongs to a certain period of historic production, and which is of relatively no interest and in no way need represent nature. Nature is infinitely many things. And it's also what we make of it.

PM: *So what does the world look like right now? We talked about the fact that urban communities are also 'nature' in the sense of cultural nature, man-made nature, like the majority of our forests and landscapes, in fact, most of what we perceive as 'natural'. Say the word nature to someone and it may well give them associations with a bil-*

"One of the most fascinating things in the countryside is often the horizon: I think you might well go mad if the horizon were taken away from you."

lowing cornfield, but that piece of industry really has nothing to do with nature. If I look out of the window here at Langelinie, Kastellet and Refshaleøen with all its industry – is that nature?

OFK: Yes, your computer is nature. And that table there. Nature just means surroundings that are constantly nascent, as in bearing new experiences, new perceptions.

PM: *Is that what nature means?*

OFK: The Latin root words 'natus' and 'natura' denote creative force, that which gives birth or begets, the course of things.

PM: *So we just have an archaic notion that nature is grass and trees and flowers?*

OFK: I believe that's down to a kind of schoolmaster mentality and schoolmaster power. These were the kind of people Poul Henningsen rebelled against. Silly distinctions. Are we supposed to sit around hankering for marigolds? I don't give a damn about marigolds.

But I would say that nature is in surroundings that have endured for some time, long enough for us to not reflect on where they came from. So in that sense, yes, those things are nature. You have to be careful about setting criteria for what makes things natural and organic, because then mountains wouldn't be nature. And you have to be careful about saying that it has to be something that developed of its own accord, because in countries like Denmark there's hardly anything like that.

PM: *How long does nature have to have been there for it to be original?*

OFK: It needn't be a historical argument.

You could also argue a case for timelessness; that it is consistent with something that lasts infinitely. And infinity is what hasn't come into being yet. One of the most fascinating things in the countryside is often the horizon: I think you might well go mad if the horizon were taken away from you. I have an elderly friend of 91, and she is very wise, so I ask her why we are so fascinated by looking out until our gaze ends by itself, as it were. She answers because you are looking inwards at yourself. And I thought, that's probably true, at least, it symbolises what you look for in yourself when you look outwards. And you may perhaps find something, an idea perhaps, but her words got me thinking about something else, about one of history's finest images or metaphors – of Plato describing the dialogue between his tutor, Socrates, and the young statesman and ideologist Alcibiades. Alcibiades asks Socrates about where one finds the good things in life, the things that matter. Socrates says that this is done by looking in the eye of another. You have to find someone else's gaze, the gaze of someone who is virtuous and when you look into that eye you will mirror yourself and find the true mirror and see yourself. And that very moment is the zenith of nature – it's physics but also nature in the sense that it is character, the character of a person, a human character, which is of course one sense of the word nature. It is strange that we use the word about both the external and the internal – we say it was his or her nature.

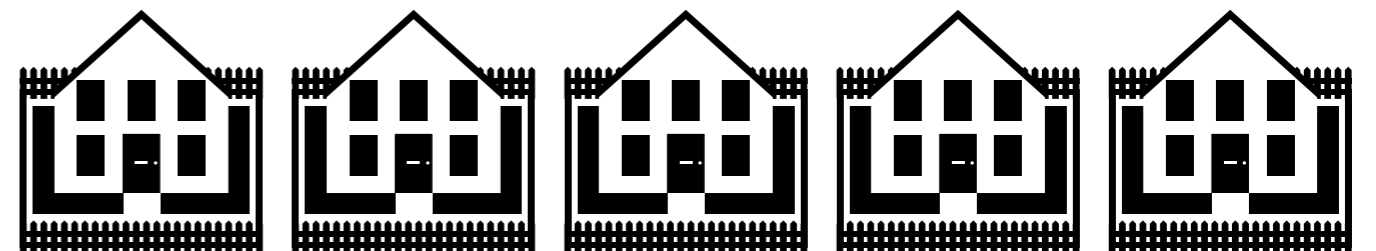
PM: *I sense there might be an element in our upbringing, in our culture that makes it difficult to reconcile ourselves to the idea that the city is good enough, that we aren't forfeiting a great deal. I also think most people have the sense that a sustainable life is one led in the country. Or at least a house with a hedge and a garden, while the city symbolises dirt, dust and filth. But that is of course wrong, and it has been wrong for many, many decades. It is more sustainable*

to live in a city than on a suburban housing estate, a fact which many Danes might take as a personal insult, but it is about twice as environmentally unsound to live outside of the cities as it is to live in cities, because cities are high-performance systems, where energy, water and many other resources can be distributed very efficiently. You can share a lot of resources.

OFK: At some stage, culture stops seeing the countryside as thrilling. When I was young, I used to think the countryside was thrilling until I realised what it looked like. Obviously it's nice in the woods, nice in the mountains, but eventually it's dead boring. The only thing that retains its fascination is the sea, and that's because you never know what it might do. But the thrill, the unexplored, the jungle-feel – the unknowns that nature has always incorporated for us – these are mostly found in the cities nowadays. If you want to be sure of experiencing something new, you're better off exploring new city districts than taking a trip out to the country – at least if you're in Denmark.

PM: *We're talking sustainable cities, but I think for many years, urbanisation has been articulated as one of our biggest environmental problems. But essentially it's one of the greatest opportunities for solving a lot of problems, that is, if we manage to apply the expertise we currently have in urban planning and design. Every single day 180,000 people move from the country to the city – that's the equivalent of two Tokyos*

"I also think most people have the sense that a sustainable life is one led in the country. Or at least a house with a hedge and a garden, while the city symbolises dirt, dust and filth."



“I like the thought of a city with an amazing receptiveness to it, that keeps hospitality top of mind.”

a year – but the cities and urban development for future inhabitants have not been established yet. That’s a bit of a challenge for our notion of what the solutions are and what the problems are.

OFK: I’m all in favour of envisaging tomorrow’s city – in the 1890s, Ebenezer Howard did that with his visions of cities where people live in harmony with each other and nature – a kind of utopia – and today Jacques Fresco is doing it with his Venus model, where transport and traffic are kept underground and where the city leads its life above ground, where there are farms, homes and recreation in the city and close to the city. Contemporary architects are phenomenal at designing homes that unite eco-design with daylighting and practical living – homes that at one and the same time unite the dream and the requirement for nature and for civilisation.

PM: So you see vast positive potential in our civilisation?

OFK: Absolutely! After World War II, a number of cities in the UK were built and rebuilt according to the Howard model, where ecology is built into the city. The same happened in several places in Germany, and Danish urban planning is also

inspired by this model, though it does call for careful and advanced consideration.

PM: So, let’s take a tour of the city of the future. A city that may be closer to utopia, but a sustainable, innovative futuristic city – what does that look like?

OFK: That gets me thinking about what the most wonderful things about the city are, and there are three things – familiarity, secrecy and the haven. I’ve always loved the little places in Copenhagen’s Vesterbro and Nørrebro districts – refuges and hideaways. Secret places being where you are not in the company of peers or people like yourself, but where you also don’t stick out like a sore thumb and can just slip away because you’re not part of anything and nobody takes much notice. I’ve sought out those places – where I could just sit in peace and be whoever I wanted to be. That’s the city I’d like, a city that lets people be.

A haven – and havens crave gardens. There’s nothing as amazing as gardens that contain a restaurant or a pub. A wild garden in a city – that would be an unexpected and surprising urban space. A place that anonymises, and that’s what you get in a big city with lots of different cultures and scenes. I’d like a city with

open and friendly cultures where you can disappear, be anonymous and become absorbed into the scene. The secret urban spaces would be those that I cannot envisage or decode in advance.

PM: You want to turn a corner and be surprised.

OFK: I want to see inscriptions in Hebrew or signs in Japanese and whatever else goes with the neighbourhood. I enjoy the challenge to the limits of my comprehension and my imagination.

PM: Is the city of the future high-rise, densely built-up and functional? Cities have a tendency to tower higher and higher – a photo of Taipei’s skyscrapers makes many Westerners exclaim that it’s ugly, but equally it’s an example of the high-efficiency, densely built-up urban centre where everything towers tall, and people don’t drive cars but ride lifts. Cities like that solve a lot of basic problems.

OFK: I prefer a mixture of the new high-rise and old wide-scape. A city of towering high-rises and old world, secretive quarters – obviously not slums or flat, monotonous suburbs, but many old unencapsulated buildings that have been left to stand as they are, boulevards and wide streets full of light and air. But also

alleys and narrow streets, because all city centres need the rush, chaos and colours – ideally with a touch of Mumbai, but not taking up the whole city. To go with that, I’d also like skyscrapers, because it’s right to extend upwards, to go by lift rather than by car. That’s the only logical thing to do – and then you must simply overcome the vertigo and integrate the organic to achieve buildings that live and breathe and are filled with flora and living materials. Experimental skyscrapers that produce energy and break down their own pollutants.

PM: A lot of experiments are being done on resource-efficiency cycles, including in the farming industry, which has projects on vertical farming and vertical pig farms. In Aarhus in Denmark there’s an amazing project in progress called ‘pig city’ where a farmer has come up with a combined pig farm and tomato nursery. He found that all the excrement from the pigs can be turned into fertiliser for the tomatoes, so he’s built a tower block with a clean, closed cycle with a pig farm on one floor, a tomato nursery on the next and then a pig farm on top, layer upon layer. There are similar projects elsewhere. Can you envisage farming and food production moving to the cities?

OFK: In fact, it’s an elaboration of the Ebenezer Howard model, where instead of arranging production around the outskirts of the city, you bring it in and make it part of the city. But I happen to be quietly opposed to eating animals and really feel that we shouldn’t be doing so. But that aside, you have to focus on what that kind of city, the city of the future, has to offer us. We need to focus on whatever gives us havens and thereby freedom for unconditional integrity and a sense of deep security among the unknowns, the opportunity to explore and immerse ourselves in the city’s secrets and thereby, ultimately, in the secrets of our own souls. In other words, the city should be the full expression of my own inner landscape

where I can find myself. And because of that, I’d also like to have the third thing I mentioned, that is, the recognition factor of the city – I’d like to be able to revert to myself in the city, not necessarily because I want to go back to the same neighbourhood, but because I want to encounter something I have encountered before, which is essentially the same as being recognised. To be expected – I’d like to live in a city where I’m expected – is that too much to ask? I’d like to be expected by chance inhabitants in a city that does not discriminate against me because of my age, income, appearance etc.

PM: How do we get around the city – will transport be hidden away, will we be walking, or driving around in cars in the middle of the city? The circulation of goods, services and people around the city is essential for its functionality – how do we achieve that in the city of the future?

OFK: Well, I liked the old tramways, but I also like the noiseless modern electric trams. Generally, we want to get rid of all noisy transport underground. The city of the future, the modern age, entails extreme traffic volumes, and that’s a problem we have to solve, and ideally stick underground in the form of express trains and connections and lots of effective intercity transport links. Because of course there won’t just be a single city, but clustered cities, regions of cities in circles with circular transport. I don’t imagine there’s much of a technological problem in putting high-speed transport under the city. Although I have a fondness for the little trains in the Tivoli Gardens.

PM: But this is just a hiatus in our history, not to have tramways in Copenhagen right now, and the new Ørestad trains will be light rail transit systems. Sort of elevated trams...

OFK: ... plus you can make electric cars and bikes available in the city. But I’m far more taken up with the social ambience of these cities...

PM: And that’s what counts most anyway – sustainability is not about electric cars and wind turbines, but about how we can create a high-performance society for human well-being, without it undermining our environment and our living conditions. So it works at a social level.

OFK: I like the thought of a city with an amazing receptiveness to it, that keeps hospitality top of mind. The ability to receive and provide hospitality, as in the friendship extended to strangers in the ancient Greek philoxenia, and the willingness to receive while the unknowns are preserved, because the unknowns are what epitomise nature.

PM: Something new and surprising – something you don’t know about already and have to delve into.

OFK: Yes. Because what makes the countryside a living hell is that it epitomises everything you already know...

Ole Fogh Kirkeby is a professor, DPhil, researcher and tutor at Copenhagen Business School, and the author of a large number of books and articles on philosophy, management philosophy, the theory of social science, and innovation.

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“Or if we couldn’t sit under a birch tree anymore? Many people might say that was a loss. I personally love sitting under a birch tree.”



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