GLOBAL CITIES IN 2035: FLOWS, SPACES AND FLUX

Centre for Strategic Futures, Singapore
Foresight Conference 2015

ABOUT US

The Centre for Strategic Futures (CSF) was established in early 2009 as part of the Strategic Policy Office in the Public Service Division of the Prime Minister's Office in Singapore. It recently moved to the Strategy Group, Prime Minister's Office. CSF serves as a focal point for futures thinking within the Singapore Government, and seeks to support a Public Service that operates in a complex and fast-changing environment.

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FORESIGHT CONFERENCE 2015

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INTRODUCTION

The Centre for Strategic Futures (CSF), Singapore, held its third Foresight Conference from 9-10 July 2015 at the Raffles City Convention Centre. The Conference is an important part of the Singapore Government's strategic foresight effort, which is aimed at helping policy-makers navigate the increasingly complex and inter-connected global operating environment. Foresight Conference serves as a unique platform for the discussion of emerging strategic issues between international and local thought leaders.

The Conference was one part of Singapore Foresight Week, held alongside the *Complexity Lens* workshop organised by Para Limes, under the Nanyang Technological University (NTU). Both were preceded in the week by the 6th International Risk Assessment and Horizon Scanning (RAHS) Symposium organised by the RAHS Programme Office (RPO) at the National Security Coordination Secretariat, Prime Minister's Office, in Singapore.

The theme for Foresight Conference 2015 was *Global Cities in 2035: Flows, Spaces and Flux*. Against a backdrop of urbanisation across the world, global cities are outsized magnets for people, wealth, resources and goods. How these forces shape the future development of global cities and reconfigure traditional spaces will pose deep questions for societies across the world. This is a summary of the discussions at the Conference, which was held in accordance with the Chatham House rule. As such, the record is of only the views articulated, and does not indicate the speakers or the organisation they represent.

GLOBAL CITIES IN 2035

More attention is being paid to global cities now than ever before, as urban areas are expected to house 60% of the world's population by 2030[1]. Against this backdrop of urbanisation, global cities have become magnets for people, wealth, resources, knowledge and innovation.

> Global cities can be characterised by their economic, social and cultural links to the rest of the world, as well as their outsized ability to influence the flow of people, capital, resources, knowledge and innovation.
>
> - Peter Ho

Looking to New York, the economy of the New York Metropolitan area alone (comprising New York, New Jersey and Pennsylvania) is comparable in size to Canada's, and its gross metropolitan product is larger than Australia's and South Korea's GDP combined.

London, on the other hand, leads as a cultural capital, coming up tops in global consulting firm A T Kearney's 2014 Global Cities Index on the dimension of cultural experience. London's connectivity to the rest of the world is also underscored by its airport system being the world's busiest by passenger count[2].

In Asia, China's cities have also been rising up the ranks as Beijing grows in political clout and Shanghai's economic growth accelerates.

But is the growth trajectory of global cities assured, given how globalisation has increased connections and interdependence, making cities more susceptible to a higher frequency of strategic shocks with greater amplitude? The rise of global cities will also bring with them a growing demand for food, water and energy, which may not be sustainable given the increasing number of consequent ecological disruptions. As more people migrate to cities, will this new scale of demands on organisation challenge traditional national constructs such as immigration, tax, and even the very notion of a national identity?

If we imagine ourselves 20 years into the future, will global cities still feature as dynamic nodes of human activity, or will people organise themselves in alternate forms on a different scale? Worse yet, will they persist in a state of dysfunction, incapable of governing themselves?

These forces will shape the development of global cities in the future and the ability of societies to grapple with their consequences will have implications on the lives of many people.

[1] United Nations estimates, up from 50% in 2007
[2] The London City airport system refers to all airports such as Heathrow, Gatwick and Luton.

One could consider urbanised societies as "flow structures" – residents in the city draw in energy, creating an inflow of energy; the city manages these flows by organising the dynamic alignment of ideas, people, institutions, resources, and so on. Professor Sander van der Leeuw in his keynote address argued that such information processing was, in fact, the core driver of urbanisation. This explains why indicators of complex thought, such as accounts, writing, law, organised religion and administration, emerged in history at around the same time; these systems emerged to help cities manage growing complexity, and in turn, drove greater expansion.

> Urbanised societies can be seen as "flow structures" that have been organised to dissipate chaos by dynamic alignment of ideas, people and institutions.
>
> - Sander van der Leeuw

But the continued growth of global cities is not assured, as future trends of urban systems may threaten this. The ICT revolution, for instance, already enables people to create value from anywhere in the world. This undermines the need for physical concentration of people for innovation. And while urbanisation looks set to increase now, population densities may eventually be constrained by the availability – or lack thereof – of food, water and energy. Climate change may also force people to reduce their carbon footprint, including transport costs. Prof Sander argued that megacities cannot keep expanding and will eventually lose some of their predominance, as the concentration of large numbers of people in a single area will undoubtedly bring about unintended problems.

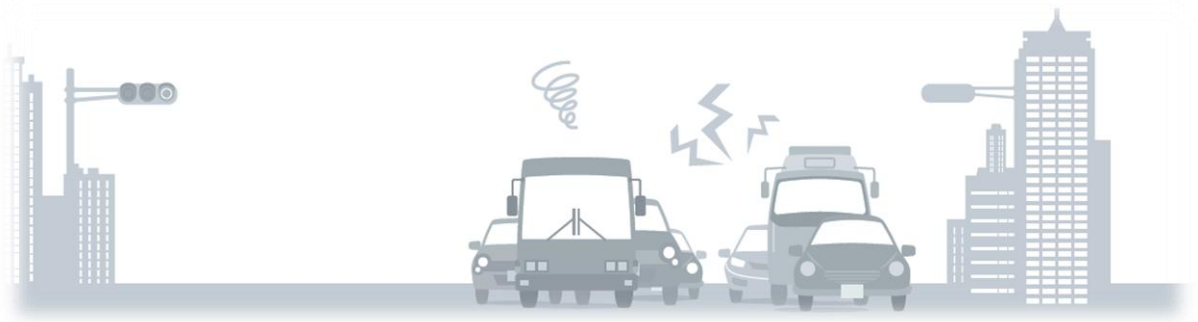
Megacities, as well as global cities, can become more resilient if they can start designing for change, in addition to responding to change. Just as information processing in the early days of civilisation led to the expansion of the "value space" and new economies, new or non-indigenous cultures (with the advent of social media, the Internet, smartphones and massive open online courses) must be allowed to find their own ways of dissipating the chaos, and in so doing, develop new values and economies.

For instance, are we able to reconsider the current "resource-to-waste" economy, which suppresses non-material, non-externalised values? Would it be more sustainable if a company rents out building materials and collects them back when a building is taken down? Such a system would "build in" the mindset of constant adaptation, and enable the city to be more nimble to change. The ICT revolution also makes it possible to grow the economy in a more diverse way by allowing value creation based not on material elements such as matter or energy, but on information.

Another example would be an institutional mechanism of "sandwiched" decision-making that involves an iterative exchange of views between authorities and citizenry incorporating a wider range of views than traditional decision-making processes. Such a mechanism also helps to keep the discussion current.

Most importantly, it is essential for stakeholders of the city to accept that urban governance needs to enable rather than constrain these new ways of information processing, and to embrace diversity and ambiguity. Prof Sander said this was "absolutely fundamental because it

goes against much of bureaucracy (and) much of scientific thinking". In the midst of complexity and ambiguity, decision-making is often underdetermined by our own observations. Decision-makers need to allow for feedback, experiments, and many more reflexive assessments and adjustments in order to make better decisions in challenging times.



FLOWS

The discussions on *Flows* examined the driving forces shaping the development of global cities in terms of innovation, capital, and wealth, and also people and culture.

What drives the flow of innovation?

- **Thinking about markets as outcomes of public policy.** One participant argued that the role of government is often under-appreciated, and misunderstood as only tinkering with the status quo to "smooth out market failures". Instead, markets are shaped and created by public policy, with many (the Internet economy, the biotech economy, among others) "deeply forced into existence" through public policy, on both the supply and demand sides. Public policy can exert directionality on markets, like the way smart cities today are directing innovation towards sustainability and connectivity.

- **When governments set missions and fund research and innovations, private companies will sense opportunities, enter the market and take innovations to the market.** Although private entrepreneurs such as Amazon's Jeff Bezos and Facebook's Mark Zuckerberg are poster boys of the Internet economy, it was in fact the United States Government that created and shaped the Internet market through Defense Advanced Research Projects Agency (DARPA). DARPA had originally developed early forms of the Internet to make defence communications more resilient. Private entrepreneurs and commercialisation came later. Indeed, commercialisation is not the objective, but economic spin-offs occur as valuable by-products of accomplishing a mission. By investing in basic and applied research and financing, the US Government helped to grow companies in the long run.

- **Where does talent go – do hubs of talent emerge by design or as an "accidental event"?** Disagreeing, another participant traced the history of the microchip to make the point that the formation of Silicon Valley was an "accidental event" without top-down intervention. According to him, Silicon Valley was birthed out of the failure of the aerospace industry following the Vietnam war, when

aerospace engineers desperate for a job re-educated themselves in other engineering fields. The invention of the microchip then led to an "enormous wave of innovation" and the pouring in of venture capital that eventually led to the formation of Silicon Valley. In fact, in 1978 when then-California governor Jerry Brown asked then-Intel CEO Robert Noyce how he could help, Mr Noyce asked (i) for the best education system in the world to produce the best talent, and (ii) for the Government to stay out of his way – i.e. no top-down intervention, please. That said, the first participant highlighted that although there was no top-down government policy then, there was actually a decentralised network of public actors present along the entire innovation chain.

Bilbao went from disaster to being seen as a model for the future, and is indicative of what is most important for the future: the ability to attract talent.

- **The contextual environment matters.** Many countries have tried to build their own Silicon Valleys without similar success. Examples of such attempts include Sophia Antipolis in France, Cyberjaya in Malaysia and Cyberport in Hong Kong. Some participants thought other contextual elements such as history and geography played a part in defining a city, while others thought it was possible to change the context. Bilbao in Spain was a case in point. It was a struggling, industrial-based city until it changed its cultural environment by building the Guggenheim Museum. This served as a "cultural shock" that rejuvenated the city and made it more attractive to talent. And while there were few "models for innovation", cities around the world were nonetheless distinct from one another. In order to understand how cities grow and develop, it was necessary to understand each city in relation to other cities, as part of a complex system.

- **Talent attracts talent.** Communities tended to form around the presence of existing talent, which in turn helped existing centres of culture and growth to develop further. For example, more and more Chinese continue to migrate to Beijing and Shanghai because talent already exists there, despite the Government's efforts to promote other centres of innovation. Thus, policy cannot overwhelm this force.

- However, **the growth of cities bring with it unintended consequences of diminishing equality and diversity, which pose significant risks.** In San Francisco, for instance, the influx of tech innovators paradoxically made the city less diverse as artists, bakers, and doctors left in response to rising income inequality and prices. In time, this would destroy the very diversity that promoted the city's growth. Another participant noted that the presence of inequality (and hence diversity of income) made it fundamentally difficult for citizens to subscribe to a single narrative, and share a collective identity. In the long run, this would threaten social cohesion.

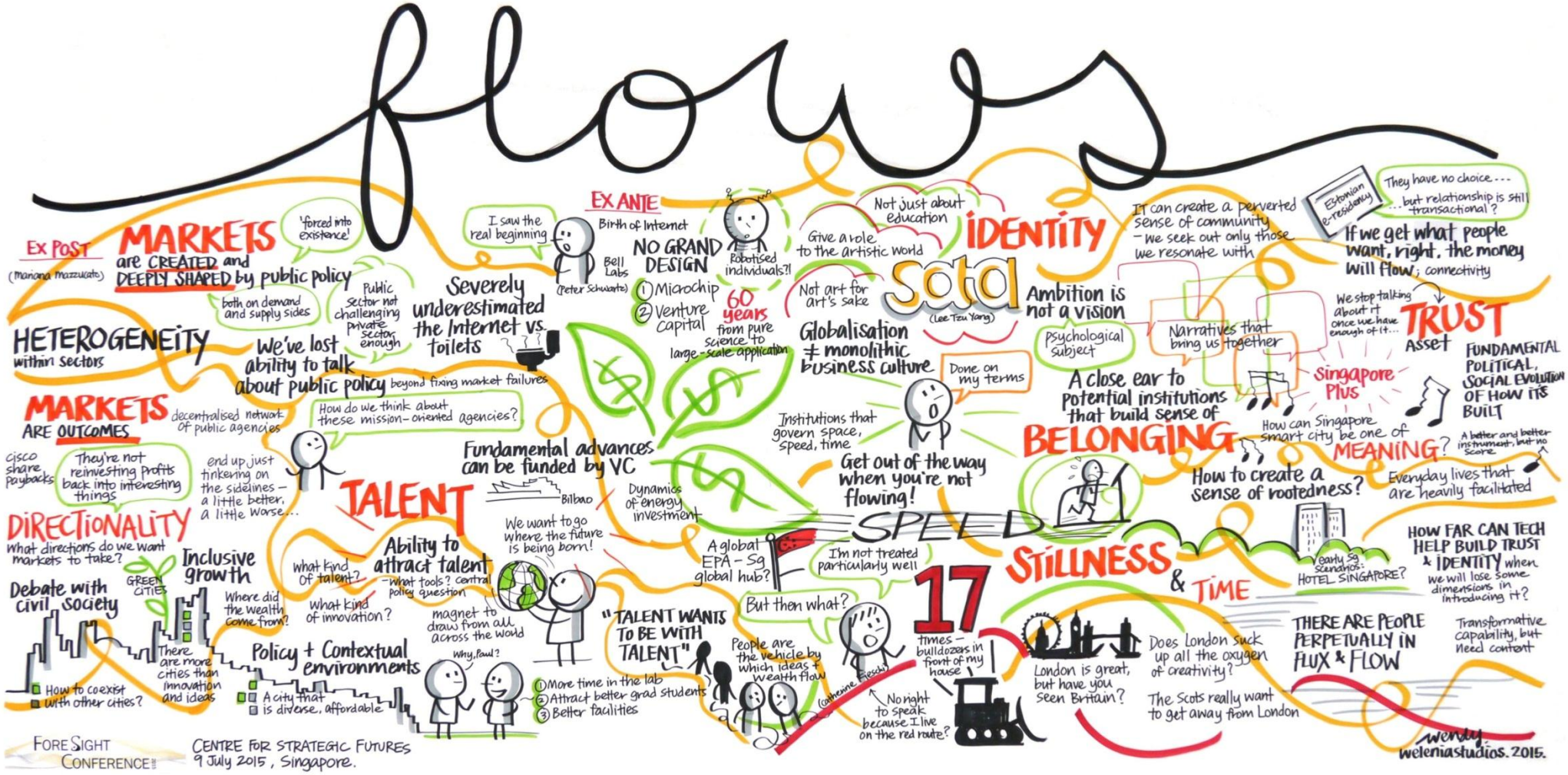
Rethinking Governance in Future Cities

- **Cities should be measured by their ability to meet people's needs, on top of its economic or cultural prowess.** Estonia's e-Residency is an innovative way in which the European Union (EU) country drew people around the world to itself. Through e-Residency, people can establish an Estonian company online within a day and thus penetrate the EU market. This "fulfilment of wants" became Estonia's long-term growth strategy.

- **In particular, their residents' political and psychological needs.** Cities are often thought of as efficient systems, but few consider the impact of speed and acceleration on the people who live in them. In London, for instance, residents suffered sleepless nights due to construction work that continued through the night, so that traffic could continue to flow during the day. A participant used this experience to make the point that when "everyone else (had to) get out of the way too when you are not flowing", it showed a "fundamental misunderstanding" of a balanced life in a city, including instruments that were necessary to create cohesion, security and a sense of belonging, which cities tended to underinvest in. This could leave people feeling marginalised and unvalued.

- **In increasingly diverse cities, creating a sense of belonging will become a principal challenge.** Relating this to his experience setting up a school for the arts , one participant noted that the school board could not design its programmes with a purely public policy objective – to explore holistic education through the arts. Rather, the school still needed support from the artists who would provide the artistic content, and thus needed to include the artists' own aspirations for the school in the design process in order to succeed. Although ambiguous, he said this was a "line that has to be walked" for any venture to succeed, between how an objective is met and the culture it creates. In cities, people don't just need to be stimulated; they also need comfort, a shared identity and a sense of belonging within diverse environments.

- **Technology can be a useful tool for community building, but it alone will not give meaning to everyday life.** Various smart city efforts ran the risk of focusing too much on process – simplifying everyday life – and less about meaning. Agreeing, another participant observed that something "of the old" was lost every time a new technology was introduced. If future communication technology leads to the loss of other relational dimensions such as tonality, it could lead to a loss of trust, identity and meaning in everyday life.



Graphic recording: Welenia Studios

SPACES

In *Spaces,* we examined how the dynamics and interactions between the driving forces shaping the global city could redefine traditional market and social spaces. While these were structured as two discussions, it was quickly evident that both spaces were tightly interconnected.

What is the market space of the future like?

As work becomes an activity that can be increasingly performed online, the cities of the future that will thrive will be those not with the best work places, but the best living places.

- **New information technologies would decrease the business reasons for people to be in cities.** Cities have been beneficial for businesses as their catchment provide economies of scale. Workers, in turn, live close to their work places. As work becomes an activity that can be increasingly performed online, the biggest talent magnet of the world will be on the web. Another effect of these dynamics could be that in place of long-term employment, workers would move from job to job. In order to meet workers' needs for some elements of stability such as financial security and training, we could see the emergence of "employment guilds".

- **The cities of the future that thrive will not necessarily be those with the best jobs, but those with the best "social spaces".** What will the basis of competition be between cities of the future? City norms may become the distinguishing factor – cities would have to experiment and form their own cultures, which will attract people who subscribe to them. Taking this scenario to the extreme, might the radical flexibility to choose with whom one wanted to live result in decreased diversity in people whom one came into contact with? The lack of interaction with the broader swathe of society could reduce overall societal trust and negatively impact a city's resilience to crises.

- **The growth of the sharing economy brings social benefits.** Despite being often considered a market phenomenon, sharing economy platforms can help to augment public services by unlocking idle resources in the community. Car-sharing effectively provides "invisible infrastructure" that supplements public transport systems at a hundredth of the cost. The sharing economy also improves

societal resilience as it can give a city access to an expanded inventory of resources in the event of external shocks. For instance, in the aftermath of Hurricane Sandy, Airbnb hosts offered to shelter people affected by the disaster for free. At the "flick of a switch", accommodation-sharing site Airbnb partnered New York City Mayor Michael Bloomberg to offer free shelter to those displaced by the storm. One question to consider is: how do we make the city the key beneficiary of the sharing economy?

- **How can we capture the benefits of the sharing economy for more residents of cities?** The current venture capitalist (VC) structure does not help in this respect, because current VC-funded sharing economy models rely on the sharing between millions of community members, who participate in the sharing economy but do not have financial stakes and control in them. One participant wondered: what if we structure sharing economy platforms such that after a certain amount of activity on a platform, participants earn the right to become an equity owner in that company?

- **The market space might be at greater systemic risk than it appears.** Climate change can be a stress multiplier that compounds the difficulties that come with managing other problems. Extreme weather and other disruptions can cause severe economic shocks, particularly to the lower income groups in emerging economies whose growing buying power is key to global economic growth. As a case in point, a typhoon in the Philippines in 2013 resulted in US$12.9 billion in losses.

- **Complex problems like climate change require political and institutional solutions, and not technological ones.** One participant asked if city governments were policy-makers or policy-takers. If they were merely policy-takers, they would eventually meet their limit of resilience. To solve these problems of political and institutional "software", they have to be policy-makers in order to create a new set of global rules and establish expectations of mutual responsibilities across cities and nations.

How might the social space change?

- **Evolution of the public space.** Historically in the Middle East, the public space for interaction moved from the public square to the mosque, to the mall, and now to social media. Social media is a lot more dynamic than a public square because it is unregulated, and users did not have to leave after a certain time, as rules in physical spaces often dictate. As a result, people were less inhibited in their behaviour there.

- **The tendency to aggravate fault lines.** Global cities have the tendency to increase social disparities and aggravate social fault lines. When cities successfully bring in talent, the cost of living increases. Expatriates and the services catered to them become more visible, socio-economic inequality increases, and locals begin to feel crowded out of their own city. Cities risk undermining the development of a collective sense of identity as a result of these disparities.

- **Cities could end up in one of two diverging equilibria.** As cities develop, two possible equilibria may emerge. In one, city authorities collect high taxes, deliver higher quality public services, and are held to higher standards of accountability. In the other, the city collects low taxes, lower quality public services are delivered, and public expectations are lower. In this scenario, goods that should be public goods such as safety and security often become club goods, bringing about gated communities within a city and exacerbating disparities. Many developing countries are firmly entrenched in the latter because it is self-reinforcing – citizens do not want to pay higher taxes precisely because the government is not providing quality public services.

Reconceptualising the space of the global city

With the growth in density of these flows and networks in global cities, inter-city diplomacy, or "diplomacity", has seen a revival.

- **Global cities as geographical nodes on multiple inter-city circuits.** Beyond unified spaces, cities can also be seen as nodes in a circuit, with co-located collections of spaces and individuals who do not necessarily have much in common with each other. Talent is moving increasingly within the circuit of cities; more than belonging to a particular country, they belong to a series of cities on a variety of circuits, such as the financial services circuit, the management consulting circuit, the athletic circuit, the legal circuit, the political circuit and so on. A city becomes global by participating in a wide and dense range of these international flows and circuits that transcend the "city" itself.

Graphic recording: Welenia Studios

FLUX

Ideas on how flows are changing markets and social spaces in global cities, a third theme emerged: Flux. We use the frame *Flux* to explore what these changes mean for different actors in a global city – the authorities, businesses, residents and their communities.

- **Most global cities face challenges of social integration.** One in five of the world's migrants congregate in the 20 cities that each have more than one million foreign-born residents. Widespread migration is taking place, both among sought-after individuals with talent and refugees escaping poverty and conflict. In many countries and cities around the world, immigration is an emotive issue that revolves around nationhood, entitlement and rights. More recently, stressors on integration faced by global cities such as Paris have manifested themselves in incidents such as the Charlie Hebdo shooting.

- **Technology can be a double-edged sword for social integration.** On the one hand, by equalising access to information, technology can reduce the time taken for new cultures to be assimilated. On the other hand, the connectivity provided by technology allows new immigrants to continue to maintain a sense of community and close ties with their home countries, so that they are less compelled to integrate. We can, however, continue to expect constant surprises from technological changes in the future.

> Technology can compress the time taken for cultural assimilation by equalising access to information, so people would not have to wait as long to be assimilated into a certain culture.

- **Can a "supra-ethnic" identity that helps to create social cohesion be fostered?** A participant suggested that multicultural cities could aspire towards a "supra-identity" – a collective identity that transcends its residents' ethnicity and cultural roots – to bind its people together. Someone responded by asking if we could use the education system, or other levers, to enable people to recognise that they can have multiple identities at any given time. Different identities could be activated depending on the context, but the "supra-identity" could serve as a type of "cement" against centrifugal forces.

- **One City, Many Systems?** One participant asked how one could think about identity formation in the face of competing norms and differing value systems held by people of different cultures in a global city. One suggestion was to consider untangling the issue of

cultural identity from other aspects of life – for instance, to separate cultural identity from legal frameworks. Taking Islam as an example of a religion that is a "complete way of life", several participants discussed if cities could concurrently have different legal systems, which may allow different value systems to coexist.

Every city is an arrival city. In China, the urban population is 54% of the total population, and 16-18% of that are recent arrivals.

- **A tale of two cities – the challenges facing emerging global cities.** While many current global cities are post-industrial cities, the emerging megacities such as Beijing, Rio de Janeiro, Bombay, which could be the global cities of tomorrow, face several big challenges. First, unlike the post-industrial cities that developed their industries first and then grew in population with urbanisation, the second group is at risk of having immigration outpace industrial development. If automation technologies further reduce the workforce required, how will these new cities create the jobs their immigrants need? Second, as cities are forced to build infrastructure quickly and cheaply to house their residents, they may opt for methods that are less sustainable and less environmentally-friendly. This will have significant implications for climate change.

The black elephant refers to the elephant in the room that, after it goes on a rampage, will be passed off as a black swan.

- **Risks for cities as three dangerous animals.** A participant observed that there were three risks arising from human tendencies that cities face. The **goat rodeo** is our instinct to convene a group of people from different professions and walks of life when we hit a complex problem (think of representative panels and multi-party stakeholder meetings). If they have fundamentally different objectives, doing so just ends up obscuring ownership over the issue and results in permanent paralysis. The **black elephant** refers to the elephant in the room that, after it goes on a rampage, will be passed off as a black swan. Some candidates would include climate change, and the belief in a re-stabilised financial system. The third animal is **us**. Throughout history, Man has evolved to be highly risk-taking as a way of learning and surviving. In the modern day, this manifests as self-destructive behaviour such as smoking and driving fast cars. Cities aggregate these destructive behaviours, giving rise to complex problems.

- **Global cities are lenses that focus both the best and worst of human societies.** The same participant argued that we needed to recognise the fact that most cities in the future will be built for the dirt poor, and will often have little governance capacity. Meanwhile, the existing cities are being bankrupted by high real estate prices, which some have theorised as having the effect of capital-starving the rest of the economy. He argued that the real issue with cities was that they are enormous centres of productive capacity, but are also

enormous lenses that converge all the challenges that people want to ignore into a compressed space.

- **Are the fortunes of global cities tied to their hinterlands?** Cities and countries are increasingly linked to their immediate regional hinterlands. Hong Kong, for example, is becoming more closely tied to the Pearl River Delta, while Thailand is forging stronger ties with the Greater Mekong Subregion. Cities will gain from the growth of their hinterlands, which in turn will allow them to benefit from economies of scale emerging out of a larger base. Following from that, a participant suggested that Singapore should consider what it would mean to truly connect economically with the Southern Malacca economic region as its hinterland. In response, a participant noted that the larger the space being united is, the less predictable the emergent consequences and tensions are. This could be one reason why there was growing currency to the view that cities rather than nations, due to their relative small sizes, have the agility and ability to achieve a dominant scale of influence and action.

On Singapore

- **The Innovator's Dilemma.** The current government does not build on an empty slate, but inherits legacies left by Singapore's founding government. It therefore faces the innovator's dilemma of having to un-create in order to re-create.

- **Where are the spaces for creativity?** A participant asked where the hidden spaces in Singapore were, similar to the unused warehouses and lofts, the nooks and crannies where ideas were traded and creativity flourished in innovative cities such as Seoul and Berlin. While Singapore was effective at centralised urban planning, these invisible, forgotten spaces could play a vital role too. Ironically, the nicer the city became, the costlier things would become and the more difficult to find such spaces – was Southern Malaysia where these spaces might go?

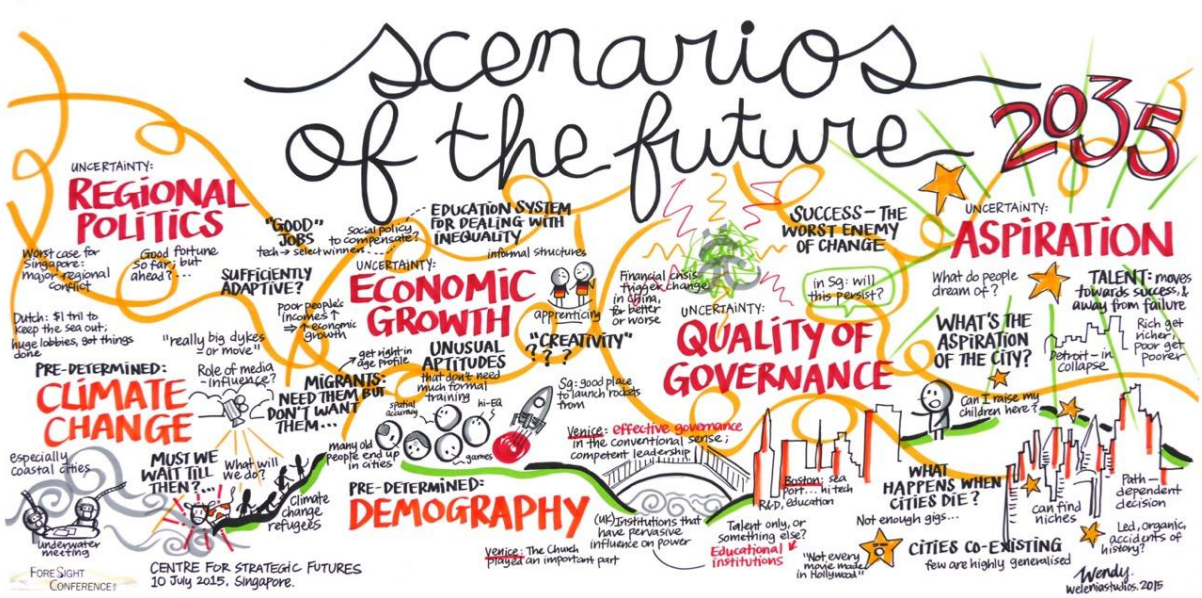
- **How broad is Singapore's matrix of possibilities?** If Singapore were to go beyond its traditional strengths of efficiency and orderliness to be a truly innovative city, perhaps it needed to examine what is limiting its ability to innovate. Did the lack of a truly local language, or the conservative values of Singaporean society, indicate potential limits? Does the budding arts and culture scene then represent hope for a greater creative force?

- **Rethinking meritocracy.** Meritocracy has underpinned Singapore's development over the past 50 years, and enabled a merit-based system for selecting individuals that are the most capable by certain measures, such as academic ability. It is noted, however, that groups that are diverse and possess a variety of abilities tend to be more productive. In view of this, a question for Singapore is whether it can design its system of meritocracy that also encourages diversity.

Graphic recording: Welenia Studio

SCENARIOS OF THE FUTURE

Having explored the flows, spaces and flux facing global cities, the Conference turned to building some possible scenarios of the global city in 2035. Participants discussed the forces that would shape the outlook for a global city, and collectively sketched out facets of the 2035 global city through the lenses of growth, decay/collapse, discipline and transformation.



Graphic recording: Welenia Studios

What are the pre-determined forces and uncertainties?

- **Pre-determined: Demography.** Global cities will need to consider both the people who choose to be in the city, and also those who are already there – such as the elderly who moved in when they were younger, the original residents who will eventually be turfed out as prices rise, as in the case of San Francisco. The population growth of cities comes largely from in-migration – what are the policies to manage this? It is important to consider how best to design a city that is liveable for not only for the globally mobile, but also for the less mobile population in society.

- **Pre-determined: Climate Change.** The only uncertainty around climate change is how far and how fast it will unfold. Many societies will need to shoulder the costs of hard decisions (e.g. massive relocation, construct large and costly dykes). Climate change refugees also have the potential to be a wide-reaching issue – we

would be confronted with the question of how to house and accommodate large numbers of displaced people with drastically fewer resources.

- **Uncertainty: Quality of Governance.** To tackle the myriad challenges, one key question is whether global cities can uphold good governance and be ready for change in moments of crisis. Some participants suggested that the quality of governance was demonstrated in the ability to galvanise society to overcome challenges. The Dutch experience with flooding was a case in point: they have spent US$1 trillion since the 17th century, and expect to spend another US$2 trillion in the next 50 years, because the experience of flooding is in their living memory, and ignoring the problem could mean the end of their very existence.

- **Uncertainty: Economic Growth.** Global cities will need to be conscious about developing industries that provide good jobs, because high growth coupled with inequality will not be a success scenario to citizens. New forms of technology are likely to reward the few who have the ability to exploit them, leading to greater inequality. The question to ask then is whether technological advancement on its own will benefit everyone, or whether social policies are needed to ensure that those benefits are shared across society.

- **Uncertainty: Regional Politics.** All cities are embedded within a broader regional context. What happens outside their borders is largely out of their control, whether it is New York, Shanghai, or Singapore. Singapore has benefitted from a relatively peaceful period in its neighbourhood, but there is no guarantee that the status quo will be maintained.

- **Uncertainty: Aspiration.** What is the city trying to become? What do its people dream of becoming? It is clear for some cities: Shanghai aims to be the economic centre of China; New York was a city that remade itself after its slump in the '80s and '90s, and its new vision of being high-tech and innovative is gaining it prominence as a dynamic global city.

What are the determinants of the trajectories for global cities?

- **Interplay of multiple factors.** Venice is an example of a city that has survived for 700 years. It started out as a port but thrived despite losing its original raison d'être of being a naval power. While the city was subject to familial, patronage-based rule, it was nonetheless

competent as a port, and that was a significant factor. The operating context was crucial, as Venice was in a geographical location that worked to its advantage. On the other hand, in the case of Boston, the clustering of education institutions created a culture favourable to innovation and knowledge accumulation that made the city successful despite an absence of strong city leadership.

- **Success can be self-reinforcing.** Success attracts talent; failure drives away talent. This translates into a winner-takes-all dynamic, where successful cities draw talent away from less successful ones. The hollowing out of Detroit following the collapse of its automotive industry was mentioned as a case in point.

- **Adaptiveness and specialisation.** A question for global cities today has to do with whether it is adequately adaptive to compete globally. Some participants felt there would be only a handful of these generalised global cities, but that there would still be space for many cities to develop more specialised niches. One participant questioned whether there would be sufficient specialisations for global city aspirants. In response, others said far more specialisations could emerge when we eventually open up new pathways and economies that we do not know about or have yet to understand. When Dubai first built a port in 1972, it did not expect the venture to lead to its port management niche today. What is next for Singapore, which already has a busy container port and an award-winning airport? Can we imagine Singapore as a space port? After all, rockets are best launched from the equator.

- **Ability to maximise available potential.** If talent is a driver of a city's success, a city that can maximise the human potential it has will thrive. The traditional way of maximising human capital has been via education, but there is potential to look at learning in the informal, non-hierarchical, and distributed sense. A participant proposed moving away from qualifications towards aptitudes. For instance, some people have the unusual ability to work out protein folding, a task that is complicated even for computers. People on the autistic spectrum may have their special kinds of intelligence tapped for targeted tasks. Other examples included people who were especially good with their hands, or had high degrees of social intelligence, both of which might be valuable in the future economy.

Virtual cities – going beyond the physical global city

- **Virtual reality, virtual cities.** An idea that caught on with a number of participants was the idea that in 20 years, virtual reality and new interactive technologies would allow people across different physical locations to interact and operate in a virtual city. Elements of this are already here, such Estonia's e-Residency, a transnational digital identity available to anyone in the world interested in administering a location-independent business online.

> Would there be the same feeling and a sense of responsibility if I have an e-residency? Why would I care?

- **Virtual government systems; inter-connected governments.** As interactive technology puts more places on a virtual plane, successful cities might be thought of as hubs that are connected to other hubs, cities and individuals. Given Singapore's aspiration to be an international arbitration hub, might it be able to provide a legal and dispute-resolution system, say for a niche area such as online transactions, which could be the start of e-courts (virtualised courts)? Can an entire government be "virtualised"? The Digital 5 consisting of Estonia, the UK, South Korea, Israel and New Zealand have taken most of their governance online. In fact, they have an agreement to put in place back-up systems in the event that a member country's system collapses.

- **Uneven leveraging of technology.** Several points were made on the harnessing of technology. One participant posited that virtual technologies will help to equalise opportunities at the individual level. If activities such as education, careers and recreation are to be conducted mostly online, the poor might more easily overcome their disadvantages such as the lack of access to good schools, and drastically improve their psychological well-being. Another participant noted that while all cities could purchase technologies to improve lives and raise their competitiveness, the cities that will thrive are those that can govern themselves and use technology to connect with other cities.

> The gates of the cities will be hyper-protected, and will be gated with the can and the cannots at the gate.

- **What would the politics be like?** Some participants suggested that politics would centre on the cleavage between the original citizens and e-citizens. Questions that would drive the political debate include the rights and responsibilities of the different groups, who to keep in, who to keep out, and who the gatekeeper would be.

- **What would we be trading?** The question of what we would trade in a post-industrial economy with more de-materialised economies and value systems came up in discussions. One idea was that we would trade "centrality in value networks", or the "control points" of new networks that confer influence and control. Just as Venice had

been a central trading node in the past, today, Internet giants Facebook and Google have seized “control points” in this information world by being first movers in social networking and web search respectively.

GLOBAL CITIES THROUGH THE COMPLEXITY LENS

In a first for the Singapore Foresight Week, participants of Foresight Conference and speakers from the Complexity Workshop came together for an afternoon of breakout discussions. Building on earlier discussions on global cities and the exploration of the complexity lens, these sessions sought to shed light on the complexity of global cities, and to provide new ways of seeing networks and underlying structures. Three themes were explored, and the insights from the discussions served as the starting point for the Closing Roundtable that followed.

(a) Cities, Space and Society

This discussion centred on how a complexity-based understanding of a city's workings could be understood.

> *We talked about how we will design urban spaces, evacuate for earthquakes, and construct society's narratives... We have to realise that tools already exist within the complexity microscope - scenario planning, agent-based modelling – you could use them to make the unpredictable more obvious, recognise early warning signals, how close we are to certain tipping points or to validate or challenge our intuitions.*

> *Decision makers tend to be reductive in wanting to get answers to specific questions – once we have a specific question, the natural reaction is to say "give me the answers to the question" if we were to look at the structure of the Singapore economy in the 1950s, we might have said that building more manufacturing factories was the way to go but, actually, there might have been other strategies, such as building a port.*

(b) Cities and Urban Governance

This session looked at the challenges we anticipate global cities of the future to face, and how urban governance could evolve to deal with cities as complex systems.

I think the question was what might governance look like in an environment that is characterised by ambiguity and speed. So in the case of ambiguity where things are constantly shifting, you can't quite predict where you are going to end up and how governance might shift in-depth in that context. In a society where elements like technology move very fast, but other elements such as institutions, culture, relationships take much longer to change, there will be tensions between the speed at which we see these different elements change, and within each layer.

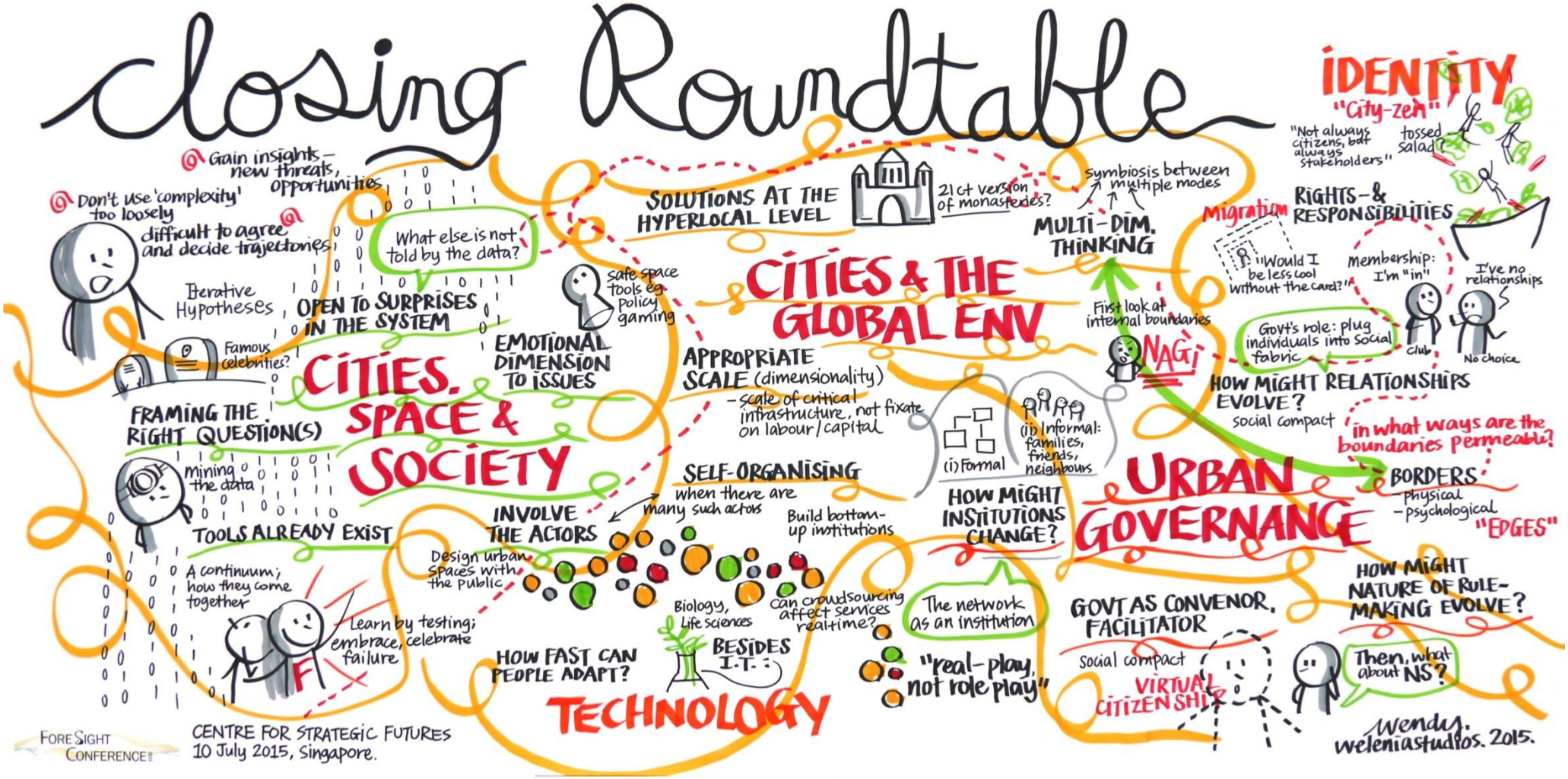
One of the key questions that will concern us when it comes to urban governance is what the border of the city in the future is, not just in physical terms but also the physiological border, the cultural border of the city. Who defines this has practical implications. For instance, if you live within these borders, what are your rights in terms of your access to certain services? If you live outside the defined borders of the city, what sort of access would you have to services provided by the city? What is the criterion for membership, what are your rights and what are your obligations as the so-called member of the city? Is this citizenship one that is inherited, is it one that is acquired, and if so for how long? Does it have an expiration period? And, finally: who decides on all these? Who determines all these?

(c) Cities and Global Environment

This conversation took a step back to view cities as actors on the global stage, and to consider whether global cities of the future will play a role in tackling complex issues of global security.

Our group spoke about cities and the global environment and it spanned a whole range of issues, from food security to health and energy to dealing with poverty and developmental issues, the income divides in the rural and urban areas. And in doing so we went back many times to the language that Sander introduced to us yesterday morning about embedded systems, the importance of feedback loops, and the interdependencies across systems.

One of the big ideas that I think occupied a lot of our discussions was that we need to solve problems at the most appropriate scale. An example was "stacktivism", a phenomenon that is taking place in the UK where people are trying to re-perceive things from the scale of the critical infrastructure and looking at them through the means of the production.



Graphic recording: Welenia Studios

THE WAY FORWARD

The two days of Foresight Conference 2015 brought together a wickedly rich mix of ideas, perspectives and voices on the topic of global cities. As with all exploratory discussions, questions begot questions. The two days concluded with more questions than we had when we started out. Such is the nature of conversations about the future.

As we looked back on our discussions, a few ideas stood out. The first was virtual cities. Imagine a future where one could socialise, buy and sell, and collaborate and compete not just in one's physical location, but in multiple virtual spaces. In a context where stakeholdership in a virtual city is de-coupled from one's physical location, a globalised market for government services could be possible. In such a world, one could choose to be an "e-resident" (ala Estonia) in a virtual city based on the transactional and governance environment it offers, such as whether rules are tightly-regulated or loosely-governed. The rise of such virtual spaces might also serve as equalisers: with education, careers and recreation conducted online, the poor could overcome some of their traditional disadvantages. For instance, inner city children will no longer be limited to attending the only public school in their residential district, but attend classes in top schools virtually. The possibilities and implications are manifold, and will redefine what society places value on. What would the cost of access or membership to these spaces be? What would competition between these virtual spaces look like?

Another issue was the reminder to pay heed to the large numbers of migrants fleeing poverty, conflict and disaster, and consider what their needs and aspirations might be. Participants painted scenes such as gated cities of the "cans" that kept the "cannots" outside, and a city nucleated into "secure" and "insecure" districts. Adding to this mix was the potential for climate change refugees to emerge as an additional stressor for city authorities. Successful cities would need to develop enlightened, innovative ways of managing these tensions to create a fair society with opportunities for a broad swathe of their populations. Even the right solutions for a specific time would eventually have to evolve, and cities would need to constantly balance chaos with order to survive and thrive.

These ideas and more served as nascent sketches of potential futures that have expanded the boundaries of our thinking. At the Centre for Strategic Futures, these have become valuable seeds for us to nurture as exploratory projects. Where they will take us remains to be seen. It is also our hope that these ideas will set you thinking about the future in new ways.

ANNEX I - PROGRAMME

Day 1, 9 July 2015

Opening Remarks
by Peter Ho, Senior Advisor, Centre for Strategic Futures

Global Cities of the Future
by Sander van der Leeuw, Emeritus Dean, School of Sustainability, Arizona State University

Flows
What are the flows and counter-currents that drive the development of global cities?
Part 1 – Innovation, Capital and Wealth
Part 2 – People and Culture

Spaces
How are traditional spaces being redefined by the dynamics and interactions of forces?
Part 1 – The Market Space
Part 2 – The Social Space

Flux
Will cities be able to ride on the tide of change and flourish, or will they be overwhelmed?

Day 2, 10 July 2015

Scenarios of the Future (Part 1)
A participant's sketch of two possible scenarios for global cities like Singapore

Scenarios of the Future (Part 2)
Collective building of scenarios of the future for global cities along four trajectories

Breakout Discussions on Global Cities through the Complexity Lens
Jointly conducted with speakers of the Complexity Workshop
Cities, Space and Society
Urban Governance
Cities and the Global Environment

Closing Roundtable
Chaired by Peter Ho, Senior Advisor, Centre for Strategic Futures

ANNEX II - PARTICIPANTS

Manu Bhaskaran	Director, Centennial Group International
Tom Burke	Chairman, Third Generation Environmentalism
Chan Heng Chee	Chairman, Lee Kuan Yew Centre for Innovative Cities, Singapore University for Technology and Design
Chng Kai Fong	Principal Private Secretary to the Prime Minister, Prime Minister's Office, Singapore
Tyler Cowen	Professor of Economics, George Mason University
Catherine Fieschi	Director, Counterpoint
Mishaal Al Gergawi	Managing Director, Delma Institute
Luke Goh	Senior Director (Public Service 21 Office), Public Service Division, Prime Minister's Office, Singapore
Vinay Gupta	Global Resilience Guru
Peter Ho	Senior Advisor, Centre for Strategic Futures, Singapore
Hwang Yu-Ning	Director (Land & Liveability), Strategy Group, Prime Minister's Office, Singapore
Parag Khanna	Senior Fellow, New America Foundation
Melissa Khoo	Director (Strategic Planning & Futures), Strategy Group, Prime Minister's Office, Singapore
Kwa Chin Lum	Director (Policy Development), Ministry of Home Affairs, Singapore
Kwek Mean Luck	2nd Solicitor-General, Attorney General's Chambers, Singapore
Lee Tzu Yang	Chairman, The Esplanade Company
Colin Lim	Senior Director (Planning & Organisation Division), Ministry of Home Affairs, Singapore
Jane Lim	Director (Social Programmes), Ministry of Finance, Singapore
Thomas Malone	Founding Director, MIT Centre for Collective Intelligence
Aaron Maniam	Director (Industry), Ministry of Trade and Industry, Singapore
Mariana Mazzucato	Professor of Science and Tech, University of Sussex
Richard O'Neill	President, The Highlands Group
April Rinne	Sharing Economy Advisor
Peter Schwartz	Senior Vice President, Salesforce.com
Sethaput Suthiwart-Naruput	Executive Chairman, Thailand Future Foundation
Tan Gee Keow	Deputy Secretary, Strategy Group, Prime Minister's Office, Singapore
Tan Li San	Deputy Secretary, Ministry of Communications and Information, Singapore
Sander van der Leeuw	Emeritus Dean, School of Sustainability, Arizona State University
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Xue Lan	Dean, School of Public Policy and Management, Tsinghua University
Yong Ying-I	Permanent Secretary, Public Service Division, Prime Minister's Office, Singapore

Complexity Workshop Participants

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Ross Hammond	Director, Center on Social Dynamics and Policy at The Brookings Institution
Lex Hoogduin	Professor of Complexity and Uncertainty in Financial Markets and Financial Institutions at Groningen University
Nick Obolensky	Chief Executive Officer, Complex Adaptive Leadership
Sheila Ronis	Professor and Chair, Department of Management and Communications, Walsh College, Troy, Michigan, President, The University Group
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