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THE LIFE OF COMPLEX CITIES

Cities are undoubtedly complex, and even more so if they are like Singapore, a state as well as an island. Jane Jacobs succinctly explained the complex nature of cities when she wrote, “City processes in real life are too complex to be routine, too particularised for application as abstractions. They are always made up of interactions among unique combinations of particulars, and there is no substitute for knowing the particulars.”

2 As complex systems in a complex world, cities are susceptible to strategic surprise, of the Black Swan variant. The early leaders of Singapore were very aware of the uncertain and unpredictable nature of the operating environment. Lee Kuan Yew said, “The past was not pre-ordained. Nor is the future. There are as many unexpected problems ahead, as there were in the past.”

3 So they understood that change is a driver, and from Day One grappled with that big conundrum which all planners and policy-makers face, which is how to plan and make policies when change is the only constant.

4 Prediction of course is not possible. Rather, the approach must be to reduce uncertainty by discovering the range of possible futures that could emerge. In this regard, a key process that is employed in Singapore is scenario planning that was famously developed by Shell more than forty years ago.

5 In Singapore, national scenarios are developed every few years. These national scenarios guide all ministries and agencies, and the process is embedded in our annual strategic planning and budget cycles. Notwithstanding the benefits of scenario planning, it cannot anticipate Black Swans. Singapore experienced a series of big shocks in the last couple of decades, including the Asian Financial Crisis of 1997/1998, the uncovering of the Jemaah Islamiyah terrorist network in 2001, SARS in 2003, and the global financial and economic crisis of 2008/2009. These experiences taught us that while scenario planning is necessary, it is not sufficient to fully understand the uncertain and complex operating environment.

6 Since the mid-2000s, the Singapore government has deployed a larger suite of tools called “Scenario Planning Plus (SP+)”. This is a toolkit that includes, in addition to scenario planning, other methods such as back-casting, wind-tunnelling, causal-layered analysis, the Cynefin Framework, sensemaking, horizon scanning, and Emerging Strategic Issues. The aim of such new capabilities is not to eliminate, but to reduce, the frequency and amplitude of strategic shocks.

7 Boundaries are very often used to reduce complexity. This is achieved by drawing boundaries around smaller parts of a larger complex system in order to make things easier to manage. This is a form of reductionism. So nations are divided into provinces, provinces into cities, cities into municipalities, and so on. Companies are organised into departments, and governments into ministries and agencies.

8 But this approach is often unable to address the wicked problems arising from complexity. In government, this is because no single agency is truly equipped to deal with a wicked problem in its entirety. This derives from the simple fact that wicked problems hardly even fall tidily under the responsibility or within the capability of one agency. So breaking through boundaries and getting agencies to work together is key to tackling the wicked problems of complexity.

9 In Singapore, we call this the Whole-of Government (WOG) approach. Public officers from different agencies are brought together to work collaboratively in order to discover potential solutions. They are required to set aside the instinctive sectarian interests of their agencies, and instead to work for the greater good.

10 Urban planning is a classic wicked problem for Singapore because of the challenge of packing in housing, green space, transport, industry and commerce, while catering to national needs such as military training areas, port, airport, and so on, all within the confines of an island of 717 square kilometres, half the size of London, or two-thirds the size of New York.

11 Singapore's development is guided by the Concept Plan – a strategic, long range plan for the development of land and infrastructure in Singapore over the next 40-50 years. The Concept Plan process is based on long-term scenarios.

12 In Singapore, the entire Concept Plan process requires close collaboration and compromise among economic, social and development ministries and agencies. But it does not end there, as there are also constituencies outside government. Consultations are held with various stakeholders in the private sector, and a period is even set aside for the general public to give feedback.

13 Our Singapore Conversation was a year-long process that took place in 2012-2013, involving more than 600 dialogue sessions. Nearly 50,000 Singaporeans from all walks of life took part in these dialogues. This process surfaced fresh insights for government – as well as for the citizens themselves – such as the desire for broader definitions of success, and greater assurance about health care and retirement, that would otherwise have been more difficult to obtain. Such an unprecedented extent of citizen – or agent – participation could be described as a Whole-of-Nation approach.

14 The Whole-of-Nation approach is a logical step forward from the Whole-of-Government approach. The citizens in Singapore are certainly better educated today. Their expectations of government are much higher. Importantly, social media has given them a voice that did not exist before. Furthermore, the wicked problems that

we face today are very complex, and no government should believe that it has a monopoly of wisdom.

15 By tapping into the wisdom of crowds through the Whole-of-Nation approach, fresh insights and new solutions are discovered, while meeting the higher needs of Maslow's Hierarchy such as self-actualisation and transcendence.

16 The "design approach" is not about fashion. The Singapore government is now using the design approach, which puts planners and policy-makers into the shoes of the stakeholders – especially the citizens – to gain deeper insights into the impact of policies and plans.

17 By looking at issues from the perspective of end-users – namely the citizen, otherwise the agent in a complex system – whether it is someone with disabilities or a mother with triplets, the government is able to design better policies than if they were just developed using the usual top-down approach.

18 The tools of foresight help the government to consider fresh possibilities to 'imagine' and 'shape' a different and better Singapore for the future. In imagining a different Singapore of the future, the government can take active steps toward realising it. But this also means a willingness to set aside tried and tested approaches that may have worked well in the past, and accepting the risk of trying something new that may have no precedent.

19 Also, as complexity implies, it is not always possible to use deterministic, linear analysis to work out the effects and outcome of a policy input. So experimentation is an important approach. Pilot programmes, prototypes and 'beta versions' are often deployed.

20 This approach of experimentation has been most pronounced in various urban solutions to grow future land capacity. The exploitation of underground space has seen some big experiments. These include the Singapore Armed Forces (SAF) Underground Ammunition Facility, which is built into a solid granite core in the centre of Singapore, and the Jurong Underground Rock Cavern, dug out of sedimentary rock under the seabed, that is now used for oil storage. The success of these experiments convinced the government to start the development of an underground master plan for Singapore.

21 Singapore is now about to launch pilot programmes in the use of autonomous vehicles within a few precincts in the city. If these pilots are successful, then the use of such vehicles may be expanded into the larger national transport system, relieving road congestion, getting people to their destinations faster – and more safely – and helping to realise the vision of a *car-lite* city.

22 The rise of complexity throws up enormous challenges. Foresight and the tools of complexity science can help governments to better deal with complexity and its

challenges. But the concept of governance must also change, in tandem with rising expectations and a more educated and empowered citizenry.

23 In the best cities, “government-to-you” will give way to “government-with-you”. Through consultation and co-creation, the people and private sectors will be tapped as true partners of government. Government-by-Agency will evolve into Whole-of-Government, which in turn will embrace the broader Whole-of-Nation approach that includes business, civil society and the man-in-the-street.

24 Collectively, they will change the concept of governance, even if they are not part of “government”, traditionally defined. The future of governance in a world of complexity lies in such systems-level coordination.

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