

ETHOS



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EDITORIAL

The Asian Development Bank has enlisted Singapore's help to step up urban development in the region. The multimillion dollar agreement, inked in March this year, will see Singapore share its expertise and conduct joint research in urban planning and management with policymakers and planning professionals in developing countries across the Asia-Pacific.

This partnership is more than a ringing endorsement for Singapore's competence. In a rapidly urbanising region where as much as 60% of the urban population still live in slum-like conditions, this deal represents a salient opportunity for Singapore to export one of our maturing strengths to a much under-served market. Our public housing and airport infrastructure have been lauded in the past. However, some scholars in the developmental field, like Dr Cecilia Tortajada, also see Singapore as an unsung leader in specialised sectors such as water management, where global demand for relevant expertise is still growing (see page 31).

Lending a helping hand to the region is all well and good, but what does this mean for a small city-state that aspires to be a distinctive, vibrant and world-class cosmopolis? If we are to distinguish ourselves as an urban destination, venue

and home, imitating successful cities elsewhere will only take us so far. Participation in regional development will offer our planners a broader canvas on which to try out new ideas, technologies and approaches. There may well be opportunities to develop our own innovative solutions and cultivate fresh talent in the fields of urban design, planning and regulation. These will pay off richly for Singapore's own cosmopolitan future.

At heart, urban planning is about a strengthening city's capacity to respond to change. The question is how this capacity might best be served. Indeed, Professor Sir Peter Hall of University College London argues that the creativity of great cities in the past was the result of tensions wrought by rapid economic and social change; he challenges Singapore's planners to embrace such creative tensions rather than plan against them (see page 5). In contemporary urban design, the prevailing question seems to be: What to plan for, and what to allow to grow organically? After all, buildings, roads and sewers give a city structure and value, but it is the free and often unanticipated interaction of its inhabitants that bring cities to life. Nevertheless, in all cities, but particularly in land-scarce Singapore, trade-offs have to be made between equally attractive

opportunities.

It is for these reasons that public communication, community participation, and consensus building have become integral to the planning process in cities worldwide, from Boston to Berlin. Singapore's own Urban Redevelopment Authority has derived great value from engaging the public, as the review of its latest Concept Plan attests (see page 8). Undoubtedly, the public discussion will continue to mature and deepen in the years to come.

Urban planning is about strengthening a city's capacity to respond to change.

It is our hope at Ethos to contribute to the discourse on urban planning and management in some small way. Our contributors in this issue offer bold new perspectives on the theme. In an interview, Professor Asit K. Biswas envisions Singapore as the water capital of the world. Paul Barter from the National University of Singapore proposes ambitious changes to public transport development and regulation. Rounding up the issue's theme is Professor Simon Tay, National Environment Agency Chairman and former Nominated Member of Parliament, who reflects on the value of the unplanned and

the relationship between place and identity.

In addition, featured in our General topical section are essays by Andrew Tan, Deputy Secretary (International), Ministry of Foreign Affairs, and BG Ng Chee Khern, Chief of Air Force, and a conversation with noted financial journalist Martin Wolf on globalisation and its implications for our region. We will also be making additional material on topics under discussion available online at <http://www.ccollege.gov.sg/ethos>.

We look forward to hearing from you and wish you a constructive read.

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Peter Hall

Creative Cities: Can they be Comfortable?

Many urban centres aspire to be creative global cities, but they should be prepared to embrace the tensions and turbulence of genuiue change.

Cities everywhere see themselves as competing in a globalised world, just like companies. Some argue this is a false analogy: cities do not compete, their companies and their employees compete. So the job of city administrations is to ensure that they can govern effectively, by providing both hard and soft infrastructure: utilities, transport links, schools, universities and hospitals, and basic structures of law and order. Singapore has performed brilliantly in this

respect, as international rankings have shown.

But there is a nagging sense that something more is needed. Cities worldwide are repeating the mantra of creativity, struggling to embrace the creative economy as the basis for their regeneration. They have all read Richard Florida's argument that success in the so-called New Economy depends on a new creative class. This class chooses congenial locations like the San Francisco Bay Area,

Austin (Texas) and Seattle. It does not particularly care about attributes like expressways, airports or entertainment districts; it looks for high-quality amenities and experiences, an open and free atmosphere, and the everyday opportunity to assert its own creative identity.¹

Richard Florida argues that a “Bohemian Index” — the number of writers, designers, musicians, actors and directors, painters and sculptors, photographers and dancers — is “an amazingly strong predictor of everything from a region’s high-technology base to its overall population and employment growth”.² He produces statistical evidence, but it is unclear which is the cause and which the effect. It may be that successful places are dominated by economic sectors that need large numbers of such people. More likely, it is a circular process: growing activities attract talented workers who then, in turn, generate new activities and new growth.

In a book I wrote ten years ago, I looked at six undoubtedly creative cities: Athens in the fifth century B.C.; Renaissance Florence; Shakespearean London; Vienna in the eighteenth and nineteenth centuries; Paris between 1870 and 1910; and Berlin in the 1920s.³ These places did not offer much quality of life to most people who lived in abject squalor by today’s standards. What they did have was something elusive — a creative milieu. I came to the conclusion that this resulted from creative tension.

All six cities were undergoing rapid

economic and social transformation — economically, socially and in value systems. They were in a state of uneasy and unstable tension between conservative and radical forces and values — places of great social and intellectual turbulence, not comfortable places at all. This disjuncture was experienced and expressed by creative people who felt themselves outsiders: the guild craftsmen of Renaissance Florence, the young actor-playwrights of Elizabethan London, the court musicians, and later the Jewish intellectuals of Vienna, the Parisian Impressionists and Cubists. An old, established order was being challenged or had just been overthrown — London in 1600, Paris in 1860, Vienna in 1900 or Berlin in 1920.

No city on earth today would want to be a city like some of these places. Indeed, their stories sometimes resembled contemporary Baghdad more than any city most of us live and work in. But perhaps cities can become too comfortable, too cosy.

In his new book *The Art of City Making*, Charles Landry argues that many cities are pursuing the wrong objective. He estimates that no less than 60 cities worldwide are claiming to be creative — but, viewed more closely, most are concerned narrowly with strengthening the arts and cultural fabric and the creative industries. This, for him, is different from — though obviously related to — the critical issue, which is how to achieve a truly creative city. He argues for soft creativity, thinking of solutions that go with the grain of the local culture, rather

than believing in a technological fix to everything; “hard” policy instruments, whether airports, freeways, concert halls or art galleries, have only a very tenuous relationship to this process.

Singapore is one of his case studies. He concludes that “The notion of a creative city implies a level of openness that potentially threatens Singapore’s traditions of more top-down action.”⁴ So, he argues, “Singapore’s strengths embody its weaknesses. It is better at creating the containers than the contents, the hardware rather than the software”. In particular, “Singapore therefore oscillates between constraint and creativity. It has a desire to plan creativity as against creating the conditions in which creativity can occur.”⁵

How can Singapore overcome this contradiction? Landry argues that citizens need to “think of your city as if it were a living work of art where citizens can involve and engage themselves in the creation of a transformed space. This will involve different creativities: the creativity of the engineer, social worker, planner, business person, events organiser, architect, housing specialist, IT specialists, psychologists, historians, anthropologists, natural scientists, environmentalists, artists of all kinds and, most importantly, ordinary people living their lives as citizens. This is comprehensive creativeness.”⁶

Singapore, I would judge, does this well much of the time. It has the diverse population that is critical for urban creativity, and it goes on absorbing new

migrants, vital to bringing in new ideas, products and services. But it finds it difficult to go the final mile, actually *stimulating* creative tension: as Landry puts it, creating conditions open enough so that it can rethink its potential in every aspect of urban life. This is the challenge for Singapore’s planners.



Peter Hall is Professor of Planning and Regeneration at the Bartlett School of Architecture and Planning, University College London. From 1991-94, he was Special Adviser on Strategic Planning to the UK Secretary of State for the Environment. In 1998-99, he was a member of the Deputy Prime Minister’s Urban Task Force. He has authored over 35 books on planning and related topics, including *London 2000*, *The World Cities*, *Urban and Regional Planning*, *Technopoles of the World*, *Cities in Civilization*, *Urban Future 21* and *The Polycentric Metropolis*. He received the Gold Medal of the Royal Town Planning Institute in 2003 and the Balzan International Prize in 2005.

NOTES

1. Richard Florida, *The Rise of the Creative Class* (New York: Basic Books, 2002), pp5-7, 218.
2. Richard Florida, *The Rise of the Creative Class* (New York: Basic Books, 2002), pp260.
3. Peter Hall, *Cities in Civilization: Culture, Technology and Urban Order* (London: Weidenfeld and Nicolson, 1998).
4. Charles Landry, *The Art of City Making* (London: Earthscan, 2006), pp354.
5. Charles Landry, *The Art of City Making* (London: Earthscan, 2006), pp360.
6. Charles Landry, *The Art of City Making* (London: Earthscan, 2006), pp385, 386.



Melissa Sapuan

Managing Singapore's Land Needs

Visionary urban planning transformed a tiny island nation into a bustling business hub. Now Singapore has set its sights on becoming a distinctive global city.

Much has changed in Singapore's urban landscape in the four decades since Independence. In the 1960s, Singapore was beset by high unemployment, an overcrowded city centre, and a shortage of proper housing and adequate infrastructure. Today, the city centre is a bustling business and financial hub, with a vibrant mix of retail and entertainment activities catering to both residents and visitors. Good quality

homes are readily available, in self-sufficient new towns and in the heart of the city. The island is served by an efficient transport system and high-quality infrastructure.

None of this occurred by chance. Singapore's unique circumstances and land limitations demand judicious, comprehensive and long-term planning. Planners in Singapore must ensure that all land use needs can be met, not only in the

present but also in the longer term, in order to sustain growth and development in the years to come.

This is achieved through the Concept Plan, a strategic land use and transportation plan which sets out Singapore's development directions some 40 to 50 years ahead. The Concept Plan takes into consideration all major land use demands such as housing, industry and commerce, recreation and nature areas, transport and utility infrastructure, as well as defence requirements, and represents Singapore's planning strategies to make best use of its precious land resources. Many features of Singapore's physical landscape, such as new towns, the airport at Changi, the port at Pasir Panjang, the reclamation of Jurong Island for the petrochemical industry, its network of expressways and mass rapid transit lines, and business parks, are the result of earlier Concept Plans.

To prepare the Concept Plan, government agencies study long-term land requirements for various major land uses. This collective effort ensures that national priorities and strategic directions for various sectors are incorporated into the land use plan.

During the recent review of the 2001 Concept Plan, focus groups – comprising academics, interest group representatives, professionals and citizens – were formed as part of a public consultation exercise to gauge public values. Feedback from the

general public was also considered. The consultation process highlighted the need to intensify housing and industrial areas, while retaining parks and identity areas as these provided a quality living environment. This exercise provided a clear indication of public aspirations for the future landscape of Singapore.

Public consultations provide a clear indication of public aspirations for the future landscape of Singapore.

FROM PLANNING TO IMPLEMENTATION

The Master Plan translates the broad strategies of the Concept Plan into detailed plans to guide development over the next 10 to 15 years. It is a statutory land use plan showing the permissible land use and density for every parcel of land in Singapore. Planning approval is required for development projects from both the private and public sectors. This ensures that developments in Singapore are carried out in an orderly manner and in accordance with the intentions stipulated in the Master Plan.

Zoning of land for specific uses ensures that sufficient land is earmarked for different needs, in line with strategic directions. This is necessary because if left

A BALANCING ACT


In land-scarce Singapore, land use planning involves trade-offs between many compelling priorities.

An important principle of planning is to protect amenity by preventing uses with negative externalities (i.e., those that create nuisance or have a negative impact on others in the vicinity) from being inappropriately located. For instance, industrial activities which could be pollutive are prevented from operating in predominantly residential areas.

A balance also needs to be found between providing flexibility for businesses and facilitating development, and minimising adverse impact on neighbouring uses. White sites were introduced in 1995 to give developers greater flexibility by allowing commercial, residential, hotel or any mix of these compatible uses at suitable locations.¹ Several white sites have been successfully sold, including those which are now the Novena Medical Centre cum retail mall, and The Sail at Marina Bay.

In residential areas, childcare centres within landed housing estates, while providing a greater choice of locations for parents and childcare operators, could create nuisance for neighbours. URA carried

out public consultations on the guidelines for childcare centres within landed areas to find a balanced solution that addressed both the concerns of residents regarding noise and traffic, and the needs of parents and childcare operators.

A balance also has to be found between flexibility for businesses and longer term sustainability. For example, while guidelines for industrial developments were relaxed to allow some e-businesses and selected media activities to be carried out within industrial premises, the requirement of a minimum 60% of industrial activities remains in place. This is to ensure that the stock of industrial space needed to support Singapore's manufacturing sector is not eroded through conversion to other uses, which could also inadvertently drive up industrial land prices. – Melissa Sapuan 

NOTE

1. Urban Redevelopment Authority, "URA to sell "White Sites" ." Press release, October 25, 1995, <http://www.ura.gov.sg/pr/text/pr95-15.html> (accessed 21 March 2007).

to the market, uses with higher commercial value could price out uses such as healthcare facilities or parks which are needed by the community. By ensuring that retail amenities and facilities such as libraries, sports facilities, schools, community centres and parks are accessible within housing estates, planning enhances the liveability of residential areas and reduces the need to travel.

Since the release and development of sites is market-led, the pace of implementing new development areas depends on market demand and investor confidence in the real estate sector.

Stipulating the allowable use and intensity of land parcels provides a degree of certainty for estimating the provision needed for public infrastructure and facilities such as roads, drains, schools and hospitals. It also facilitates planning for the distribution and phasing of these amenities, and for coordinating their implementation. Furthermore, it gives certainty to owners and occupants regarding the land use or activities in their neighbourhood. Zoning also encourages the clustering of compatible uses: for


example, sites are identified to meet the demand for hotel rooms in suitable locations such as within vibrant and interesting mixed-use belts along the Singapore River and Orchard Road.

New strategic areas are identified for development in the medium-term to meet business needs so that infrastructure can be put in place and demand channelled to develop these areas. The Urban Redevelopment Authority (URA) coordinates the efforts of government agencies in infrastructure development to open up new areas such as Marina Bay (see box story). The Government Land Sales programme is an important tool for implementing development strategies and releasing land to meet the demand for various types of properties. It also facilitates the participation of the private sector in the development of Singapore. Since the release and development of sites is market-led, the pace of implementing new development areas depends on market demand and investor confidence in the real estate sector.

PLANNING FOR SUCCESS

Planning in Singapore is about making the most effective use of limited land resources to create a distinctive, attractive and vibrant city, not only for now but also for future generations to enjoy. Long-term planning for all our various land needs provides the assurance that population and

economic growth can be accommodated. This includes providing a choice of different housing types and locations, space to grow businesses, attractive and accessible recreational amenities, and a comprehensive and efficient road and rail system to meet transport needs. Planning also enables Singapore to retain its natural and built heritage, helping to create a

world-class city which is not only attractive, but also distinctive and authentically Singaporean. 

Melissa Sapuan is Executive Planner in the Physical Planning, Concept Plan and Policies Section of the Urban Redevelopment Authority.

LAND USE PLANNING IN SINGAPORE: PRINCIPLES AND STRATEGIES FOR SUCCESS

SMALL ISLAND, BIG NEEDS

Land use planning in Singapore presents unique challenges. Singapore is a small city-state. In addition to catering for housing, business, social and recreational needs, activities which are typically located outside the city have to be accommodated within Singapore's limited land area. These include international ports and airports, and major utilities such as water treatment plants and power stations. Land also has to be set aside for water catchment and storage, as well as for security needs, such as military training areas and bases.

At the same time, there are constraints

to the free development of an already limited stock of land. Building height is limited by the flight paths of planes. There are also restrictions on locating pollutive uses of land, such as industries, which have to be restricted within water catchment areas to protect the quality of the water supply. Other major utilities such as power stations and incineration plants impose health, safety and nuisance buffers, which limit the activities and developments that can be permitted near them.

Singapore's finite land resource means trade-offs inevitably have to be made between different uses. For example,

providing more land for industrial developments may require housing to be more densely built, while the retention of natural areas may reduce land available for development.

The key challenge is therefore to consider the various land use demands comprehensively so that potential trade-offs between uses can be evaluated holistically in order to meet two primary objectives: catering for growth, and providing a good living environment. Should we set aside more land for industries to support economic growth? Should we plan for more landed and low-density housing areas, or should we keep more nature areas, parks and open spaces, as well as heritage areas which could otherwise be redeveloped? How can we decide what is more important for the country? What does the public value?

STRATEGIES FOR SUCCESS

Residential Land Use

Singapore's strategy for residential areas is to increase densities for new housing, particularly in the city area, in order to minimise land required. At the same time, landed and low-density housing areas are retained to create variety and offer options in Singapore's residential environment, in order to meet the housing aspirations of Singaporeans. The challenge is to create equally attractive high-density housing

areas. This can be achieved by providing good amenities and transport facilities to make living in high-density areas more convenient. Greenery and good urban design can also make dense residential areas more attractive. Public feedback has also shown that people are generally prepared to live in high-rise apartments with higher floors, if privacy is maintained through good design and layout.

Singapore's challenge is to find a balance between optimising industrial land use and retaining its competitive edge as a manufacturing location.

Industrial Land Use

Given that manufacturing is expected to remain a significant contributor to the economy, land is needed to support the growth of the industrial sector. This includes high value-added sectors, such as petrochemicals and pharmaceuticals, which typically require large tracts of land due to the nature of their production processes and plant layouts.

Without further intensification of land use in land-scarce Singapore, it may be difficult to continue to sustain the growth of the industrial sector in the longer term. However, companies are often reluctant to redesign their processes or intensify their

development, as this could introduce production risks. Requiring them to do so could make Singapore less competitive.

Some design innovations, such as JTC's stacked-up factories,¹ which have ramps which allow container trucks to make doorstep deliveries to higher floors, are geared towards more efficient use of industrial land.

Nevertheless, higher-intensity industrial developments have yet to gain widespread acceptance from industrialists. Singapore's planning challenge is therefore to find a balance between optimising industrial land use to ensure that future needs can be met, and retaining its competitive edge as a manufacturing location today.



Tampines Regional Centre

Commercial Centres

The growth of the Central Business District into the reclaimed land at Marina Bay was planned over 30 years ago and is now being realised. Tampines Regional Centre, the first of the regional centres proposed in the 1991 Concept Plan to be developed, was built up through the sale of over 10 land

parcels in the span of about a decade. Tampines today is an established hub for the back offices of many financial institutions, and a retail and entertainment hub serving the needs of residents in the eastern part of Singapore. In the next few years, the focus outside the city centre will be to build up Jurong Regional Centre into a business and transportation hub and to develop Paya Lebar into another commercial hub to meet the demand for business space. Detailed plans for these new commercial centres will be released in 2008 as part of the review of the Master Plan.

Transportation

Land use planning plays an important role in improving accessibility to goods and services and reducing the need to travel. For instance, the majority of commercial activities is planned to be located within the city centre to create a critical mass of activities and help position Singapore as a global business hub. To allow people to live close to this concentration of employment opportunities, more housing is being introduced into and near the city centre. Outside the city, more employment areas are planned near suburban residential areas; for example, industrial estates are situated at the fringe of housing estates and more commercial hubs such as Tampines Regional Centre and Novena fringe centre. This helps reduce commuting

and lessen transport demand.

The rail network will be expanded to at least double the current network in the long term. Radial lines will provide direct links to the city centre, while orbital lines will serve those travelling from one place to another outside the city centre. This will enhance accessibility and reduce travel times, making public transport more attractive and reducing reliance on private transport.

With less reliance on private transport, the need for more roads and road-widening which may affect surrounding land uses will be reduced, and environmental quality will be better maintained as noise and air pollution will also be reduced. Higher-density developments can be sited at locations well-served by rail transit stations, providing convenient access without creating excessive congestion.

Recreational Land Use

As Singapore becomes more built up, the presence of greenery and open spaces will become even more important as a relief to high-density living. While parks and open spaces take up a significant amount of land, their availability is highly valued by the public for recreation and relaxation. Hence, even though demand for land will increase with a bigger population,² more land will be set aside for parks and open spaces.

The introduction of park connectors creates “green corridors” linking parks with

town centres, sports complexes and homes. This expands recreation space and increases accessibility to parks and the coastline, with minimal opportunity cost, since park connectors generally run along drainage reserves, road reserves or under viaducts. Today, the total length of park connectors in Singapore is 70 kilometres; the aim is to increase this total length to 200 kilometres by 2012, and to more than 400 kilometres in the long term.

Water bodies will also be integrated with parks and green spaces to create new opportunities for water-based recreational and leisure activities. Promoting sky-gardens and high-rise greenery will also help to create a sense of pervasive lush greenery even in built-up areas.

Land Optimisation

To help manage land demand, several innovative land optimisation strategies have been adopted, such as building more intensively, making better use of underground space or co-locating uses. Singapore's long-term planning approach ensures that even as land is set aside for economic activities, there is sufficient provision of land for a variety of housing types, parks and open space for recreation, and community facilities without maximising the use of every land parcel to the detriment of the overall quality of the environment. Some areas, not needed to be developed yet, are put to interim short-

term uses, for example, agriculture in Lim Chu Kang and cultural/arts activities in the old Tanglin Camp.

Even in the area of infrastructure planning, land optimisation measures are in place. The Deep Tunnel Sewerage System, currently under construction, will link two centralised water reclamation plants; once the system is in use, many existing water reclamation plants and pumping stations located all over the island can be phased out eventually and the land put to other uses.

Creating a Distinctive, Attractive City

An important planning principle in Singapore is to create a city which is attractive, vibrant, liveable, and distinctive. One of the tools to achieve this is good urban design, which can generate quality environments and distinctive identities. For instance, urban design guidelines require new developments fronting the Singapore River to be no more than four storeys high at the front and up to 10 storeys high at the back. This maintains a comfortable human scale along the promenade defined by the low-rise conserved shophouses and warehouses along the river. Pitched roofs are required to complement the distinctive historic character of the area. To create an exciting cityscape, the Urban Redevelopment Authority (URA) also actively promotes architecture and urban design excellence

to create an awareness and appreciation for good design and to encourage greater creativity in design.

Another strategy is to capitalise on assets such as Singapore's islandness – for example, with waterfront housing, coastal parks and waterfront recreational opportunities. A further measure towards creating an attractive environment is through greening and conserving our natural heritage where possible. Beyond the protected nature reserves, nature areas are retained and integrated within parks and other developments where feasible. For example, as a result of government-facilitated consultations between a golf course developer and the Nature Society, core areas with rich flora and fauna were preserved at Kranji, and the re-creation of natural habitats allowed birds, including some endangered local species, to continue to roost.

Conservation

The preservation and restoration of historic areas is an important element in Singapore's distinctive cityscape, and there is now widespread public support and interest in conservation. As more of our city becomes developed and redeveloped to cater to the needs of a larger population, the retention of our identity through conservation will become more important.

Nevertheless, it remains a challenge to strike a balance between retaining



The "old-and-new" approach allows for shophouses to be conserved between new infill development.

historic streetscapes for the public and intensifying the use of land through redevelopment. Innovative strategies like the "old-and-new" approach allow for shophouses to be conserved between new infill developments, such as China Square. In the conservation of buildings in the Syed Alwi area, while critical buildings which contributed to the identity and character of the street were retained, others were excluded to minimise the loss of development potential and restrictions in redevelopment. – Melissa Sapuan



NOTES

1. JTC Corporation, *Stack-up Factory*, <http://www.jtc.gov.sg/products/readybuilt/stackup/pages/index.aspx> (accessed 21 March 2007).
2. Urban Redevelopment Authority, "Planning for Growth, Investing in Our Future", Speech by Mr Mah Bow Tan, Minister for National Development, 9 February 2007, <http://www.ura.gov.sg/pr/text/2007/pr07-14.html>

Ching Tuan Yee & Benjamin Ng

MARINA BAY: THE SHAPE OF THINGS TO COME

Singapore's new waterfront business district will feature state-of-the-art infrastructure and urban design features.

Waterfront business districts such as Canary Wharf in London and Pudong in Shanghai have come, in recent years, to signify urban progress and prosperity. They have raised the international profile of their respective cities while spurring growth and investment.

Singapore's own flourishing Central Business District (CBD) will have to be expanded to meet the challenges of a growing economy, and to maintain Singapore's position as a premier financial and business centre. The groundwork for this expansion of the existing CBD into a

waterfront business district in Marina Bay had been laid as early as the late 1960s. Land adjacent to the CBD had been reclaimed in phases between 1969 and 1992, but the long-term vision for Marina Bay was first crystallised in the Urban Redevelopment Authority's (URA) 1983 conceptual Master Plan.

FACTS & FIGURES

The 360-hectare Marina Bay is located at the southern tip of Singapore and most of the developments will be completed by 2009:



Marina Barrage	end 2007
The Singapore Flyer	2008
Marina Bay Sands	2009
The Sail @ Marina Bay	2009
Marina Bay Financial Centre (first phase)	2009 – 2010
Gardens by the Bay (first phase, at Marina South)	2010

GROUNDWORK FOR SUCCESS

URA adopted a holistic and integrated approach to land use, transport planning and implementation in Marina Bay, with several distinctive features:

Flexibility

To cater for the seamless extension of the CBD, the development parcels in Marina Bay were planned based on a grid urban pattern. This pattern facilitates development by creating a flexible framework that can accommodate the amalgamation, subdivision and phasing of developments according to market needs. It also provides a vehicular and pedestrian network with a clear sense of orientation and hierarchy.

Innovation

Planners recognised that current fixed-use zoning system would be too inflexible to meet the constantly changing land use needs of the new business district. The concept of “white” zoning was thus introduced, where developers have the flexibility to decide on the mix of uses for each site, including housing, offices, shops, hotels, recreational facilities and community spaces. This increased the potential for mixed-use developments and encourages live-work-play communities.

The infrastructure of Marina Bay also features creative engineering approaches such as the Common Services Tunnel (CST),

an extensive system of underground tunnels which houses all essential utilities, including a district cooling system and a centralised refuse collection system.

Value Creation

In the planning of Marina Bay, specific attention was paid to the ambience and value of individual developments. Distinctive districts, each with attractive public open spaces and tree-lined boulevards, provide signature address locations for developments.

Along the waterfront and fronting key open spaces, urban design guidelines ensure that building heights are kept low and visual porosity is maintained between buildings. This safeguards views to and from individual developments, enhances their attractiveness, and creates a pleasant and aesthetic “stepping up” skyline profile for the district.

Developments in Marina Bay will be served by a comprehensive transport and pedestrian network — a critical but often underestimated factor in real estate planning. Marina Bay is well connected to the city’s road and rail network and is a short 15- to 20-minute drive from the airport. Developments are fully integrated with transport nodes, through extensive underground, at-grade and above-grade pedestrian links. A 3.35-kilometre long pedestrian route is planned around the Bay, including a waterfront promenade

and a new bridge, which will create a continuous loop of attractions accessible to all.

More than 100 hectares of the waterfront land has been set aside for the creation of the Gardens by the Bay. Three waterfront Gardens will capitalise on

Marina Bay's green and blue assets to create an international attraction and local amenity, enhancing the value of developments in the district. The Gardens will be interconnected and linked to surrounding developments, open public spaces, transport nodes and attractions.

PLANNING PRINCIPLES IN ACTION: THE MARINA BAY FINANCIAL CENTRE

The planning and sale of the Marina Bay Financial Centre (MBFC) site exemplifies the principles of flexibility, innovation and value creation.

For this site, the concept of a Master Developer was introduced for the development of an integrated business and financial centre on a large site, three times that of a typical commercial site. This was to allow the developer flexibility to master plan and customise the development to meet the needs of modern financial institutions and global businesses, and to implement it in phases, in tandem with market demand.

At the time of the announcement of the sale of the MBFC site in 2005, there were concerns that it would result in an oversupply of office space, and that it would lead to a hollowing-out of the existing CBD, given the poor economic sentiments then. To allay market concerns and minimise risk to the master developer, URA, as Land Sales Agent on behalf of the State, introduced a new flexible scheme for the sale of the site. Under the scheme, the developer was allowed to purchase and develop the site in phases to match market demand, thus mitigating business risks and lowering upfront costs.

PARADIGM SHIFT

In planning for Marina Bay, URA has had to challenge established boundaries in order to develop a new model of city living.

Having provided for much of the “hardware” for the new business district, it became clear that URA had to go beyond its traditional roles of urban planning and land sale management — it had to undertake marketing, promotion, and place management activities as well, in order to showcase the distinctiveness of Marina Bay. To this end, the Marina Bay Development Agency (MBDA) was set up as a department within the URA to focus on the “software” of developing Marina Bay.

A branding exercise for Marina Bay established a consistent brand platform, which enabled future stakeholders, such as the MBFC, to market their offerings to international investors and visitors and define the strength of the new business district. As a result, the profile of Marina Bay has been raised both locally and internationally, catching the attention of international developers and investors through URA’s conscious efforts to showcase Marina Bay at major overseas conferences and international real estate exhibitions. Branding has set Marina Bay apart from the competition: to date, it has attracted development investment of \$10 billion.

To generate buzz at Marina Bay, a calendar of events and activities for the

public spaces and water-bodies has been planned, with URA playing a coordinating role with various partner agencies such as the Public Utilities Board, National Parks Board, Singapore Tourism Board, Singapore Sports Council and Singapore Land Authority. Signature events like the Marina Bay Countdown have initiated a new urban tradition to welcome the New Year, while sporting events like the F1 Powerboat Race have created much excitement on the water. Other unique activities have been planned, including the Marina Bay Urban Challenge, which includes a series of sporting events and races such as a duathlon, a vertical challenge and special runs for children and women. 

Ching Tuan Yee is Executive Architect in the Urban Planning Section of the Urban Redevelopment Authority. Benjamin Ng is Place Manager in the Marina Bay Development Agency.



Yap Chin Beng

Homes for a Nation — Public Housing in Singapore

To meet the changing needs and aspirations of a more affluent and diverse population, Singapore's public housing will have to evolve in significant new directions in the coming decades.

A TOTAL LIVING ENVIRONMENT

Singapore's public housing programme has its roots in the 1960s, when the acute housing shortage called for a low-cost housing model that could meet the people's accommodation needs in the shortest possible time. Housing designs were kept simple and utilitarian — slab blocks of 1-, 2- and 3-room flats which came with basic amenities such as piped water and electricity. Although spartan

by today's standards, these flats were far better than the slums and rural huts of the past.

Following the first Concept Plan¹ for Singapore in 1971, HDB designed its public housing estates on two basic principles:

1. Optimise scarce land resources to meet long-term housing demands which led to the building of high-rise, high-density public housing.

Singapore's Approach to Public Housing

When Singapore attained self-government in 1959, only 9% of Singaporeans resided in public housing. Most of the population was living in squatter colonies and city slums in unhygienic and potentially hazardous conditions.

The priority at that time was to build a large number of flats as quickly as possible. To resolve this housing crisis, the Housing and Development Board (HDB) was set up in 1960.

Three features have characterised Singapore's approach to public housing since Independence:

- a. A sole agency in charge of public housing, enabling more effective resource planning and housing allocation. HDB was able to secure

land, raw materials and manpower for large-scale construction in a way that optimised resources and achieved economies of scale.

- b. An integrated approach to housing from planning and design, through land assembly and construction, to management and maintenance.
- c. Strong political and financial commitment from the Government.

There have been vast improvements in the living conditions of Singaporeans over the years. Today, 82% of the population live in 879,000 HDB flats located across 23 towns and estates. More remarkably, about 95% of all HDB residents own the flat they live in.

2. Provide a total living environment with educational, social and community facilities in sustainable and self-contained new towns.

To meet the changing needs and lifestyles of Singaporeans, public housing has evolved over the years from the basic low-cost housing units of the 1960s to

the high quality, reasonably priced apartments that are the hallmark of Singapore's urban landscape today.

1970s — Rise of the New Towns

By the late 1960s, HDB adopted a more sophisticated "New Town" approach to residential urban planning: integrating

residential areas with a town centre, parks, commercial and industrial areas and communal facilities such as a sports stadium and swimming complex. Developed in the 1960s and 1970s, Toa Payoh was the pioneer New Town, followed by others such as Ang Mo Kio and Bedok. Towns were comprehensively planned, so that each neighbourhood had its own smaller neighbourhood centre with shops, while the whole town was served by a larger town centre which formed the main activity hub. For the newer towns developed in the late 1970s such as Yishun and Bukit Batok, HDB incorporated additional design factors such as scale, street architecture and natural landscaping. Open space guidelines and pedestrian path systems were also introduced.

1980s — Quality Precincts

Rising affluence in the 1980s brought greater social aspirations and higher expectations for public housing. Town planning began to consider factors such as urban form, town structure, and the provision of regional facilities such as parks and open spaces. There was also greater emphasis on streetscape and the building of point-block apartments.

During this time, the “precinct concept” was established to provide a more conducive setting for community interaction. HDB neighbourhoods were

sub-divided into several housing precincts, each comprising 400 to 600 dwelling units. A wide variety of recreational facilities for residents — playgrounds, fitness corners, multi-purpose courts and reflexology paths — were located at each precinct centre. To facilitate community interaction, precinct pavilions were also provided. Examples of the precinct planning concept can be found in Bishan and Pasir Ris Towns.

1990s to the Present — Premium Housing

In the 1990s, greater emphasis was placed on creating a quality living environment and building up the identities of precincts, neighbourhoods and towns. Landmark buildings, landscaping, open spaces and special architectural features were incorporated to achieve a strong visual identity for new towns like Choa Chu Kang, Sembawang and Sengkang. To give residents a wider choice and variety of housing, HDB also launched a new range of apartments — Premium Flats — designed with better fixtures, finishes and facilities. New residential concepts such as the “Punggol 21” waterfront town were also developed in response to changing lifestyles and aspirations. In Punggol, intimately scaled estates were developed, each with a common green as a recreational focal point for the community.

PUBLIC HOUSING — A PILLAR OF NATION-BUILDING

Beyond providing physical shelter for Singaporeans, the public housing programme has also served as an important policy instrument in promoting national objectives such as social mobility, rootedness and social integration.

A hallmark of the public housing programme has been its policy of home ownership. Started in 1964, the Home Ownership for the People Scheme gives home-owning citizens a tangible asset and stake in the country, and promotes rootedness and a sense of belonging among Singaporeans, thus contributing to the overall economic, social and political stability of Singapore. Home ownership also provides Singaporeans with a hedge against inflation and a store of value, which can be monetised during times of need.

Today, a framework of public housing subsidies makes public housing affordable for families buying their first HDB flat, and for second-timers to upgrade to a bigger

flat. Together with the Central Provident Fund scheme, healthcare support and Workfare, public housing has become one of the key pillars of Singapore's social security framework.

Social Mobility

Singapore's home ownership framework has helped to create a large asset-owning population, with a strong work ethic oriented towards upward social mobility. As the value of HDB flats have generally risen over time, many flat owners would realise gains from selling their flats. The asset values of HDB flats are also preserved and enhanced through various estates renewal programmes funded by the Government. These asset values can be unlocked when owners sell their HDB flats on the open market.

Social Integration


Public housing plays a crucial role in

~ Continued overleaf

~ Continued from page 25

maintaining social harmony in multi-racial, multi-cultural and multi-religious Singapore, by providing a living environment where Singaporeans of different races and socio-economic groups have opportunities to mix and interact with one another. This is achieved by providing commercial, educational, recreational, community and social facilities in public housing estates; varying the flat types and sizes within each HDB block; and setting limits on the ethnic proportions within each public housing block and neighbourhood.

Shared Experience

Today, 82% of the population is housed in HDB estates, and the estates (comprising flats and a comprehensive range of facilities) have become a common point of emotional reference for the vast majority of Singaporeans. This “HDB Experience” has played an important role in bonding Singaporeans, in the same way that National Service and the education system have created common experiences among Singaporeans of all races and from all walks of life. – Yap Chin Beng 

THE FUTURE OF PUBLIC HOUSING: CHALLENGES AND OPPORTUNITIES

Today, public housing continues to play a central role in nation-building. One of the most important considerations for planning and policy is to ensure that public housing remains responsive to the changing needs, aspirations and circumstances of Singaporeans over time.

While public housing in the 21st century will evolve to encompass a wider spectrum of housing types, the mission of providing Singaporeans with affordable homes in cohesive communities will remain a top priority.

Shifting Demography — Changing Needs

HDB regularly reviews the type of flats and housing forms to be built based on the changing demography and life-cycle housing needs of the population.

With evidence of an ageing population and a widening income disparity in Singapore, more attention is now being paid to meet the housing needs of the elderly and low-income flat buyers. Strategies that HDB have adopted to address these needs include:

More flat types — HDB launched Studio Apartments (SAs) in 1998 to provide the elderly with an alternative

housing option. The SAs feature a compact design and elder-friendly safety fittings such as grab bars, bigger switches and an alert alarm system. The units are sold in a move-in condition, with flooring, built-in wardrobes, kitchen cabinets and stoves provided. Located in established towns near existing amenities and transport nodes, SAs maximise convenience for the elderly while allowing for independent living. Where possible, a social support facility run by a voluntary welfare organisation is also provided within each development. To date, seven SA projects have been completed, with another seven currently under or slated for construction.

In recent years, HDB has also re-introduced new 2- and 3-room flats to cater to the housing needs of lower-income groups. Additional subsidies are also given to aid the purchase, ensuring that up to 90% of the population can continue to afford an HDB flat.

Accessibility — To meet accessibility needs, particularly those of our ageing population, HDB has embarked on a three-pronged approach, comprising Lift Upgrading, Universal Design (UD) and Barrier Free Accessibility (BFA). UD was introduced to make all future HDB estates more user-friendly for the elderly, disabled and those with young families. New HDB flats will henceforth be built

with step-free interiors and wider corridors to facilitate wheelchair movement. At the precinct level, BFA will be supported through provisions such as ramps, which will provide the elderly and the wheelchair-bound with seamless access to carparks, bus stops and other facilities. HDB is also working with relevant agencies such as the town councils and the Land Transport Authority to expand barrier-free improvements in existing HDB estates, with the objective of making all HDB housing estates barrier-free by 2011, so that residents of all ages will be able to move about easily within the new estates and enjoy all facilities to the fullest.

Private Sector Involvement

To meet the rising aspirations of Singaporeans, HDB has sought to provide more variety in housing forms through partnership with the private sector.

In addition to the Design and Build Scheme, in which HDB engaged private sector consultants to design and build public housing, HDB launched the Design, Build and Sell Scheme (DBSS) in 2005. Under DBSS, the private developer is responsible for the entire public housing development process — from bidding for the land, designing the project, overseeing construction to selling the flats directly to eligible buyers.


Estate Renewal and Regeneration

Another key emphasis of public housing in Singapore is estate renewal and rejuvenation. In the 1990s, the Estate Renewal Strategy (ERS) — comprising the Main Upgrading, Interim Upgrading and Lift Upgrading Programmes — was introduced to bring older towns to the standard of newer ones. The Selective En bloc Redevelopment Scheme (SERS) was also introduced to enable HDB to acquire older flats for redevelopment. The residents involved are offered new replacement flats nearby so that they can enjoy modern amenities and a fresh lease of 99 years, while retaining communal ties in a familiar neighbourhood.

In the next decade, as the number of HDB flats aged 40 to 50 years grows, the need to upgrade and redevelop the older estates will take on greater urgency. One priority area is lift upgrading. The Government has committed to bring lift upgrading to all eligible HDB blocks by 2014, so that residents of these blocks can enjoy lift access on every floor. HDB is also studying innovative lift solutions to lower upgrading costs so that more HDB blocks can qualify for lift upgrading.

Looking further ahead, HDB will be embarking on a programme to build a new generation of public housing and regenerate existing public housing estates. Among the ideas under study is

the concept of “Housing in a Park”, which will complement Singapore’s vision to be a City in a Garden. This will involve the creative integration of greenery and eco-friendly features into public housing. The new generation of HDB estates will also feature more communal spaces within each precinct, and even at the mid-levels of HDB blocks, to facilitate greater community participation and ownership (see box story “Community In Bloom”).

The urban regeneration of HDB estates will mark a new milestone in Singapore’s public housing programme. It will constitute an integral part of our vision to build a distinctive city and an endearing home for Singaporeans, while also meeting their life-cycle needs. 

Yap Chin Beng is Director of Estate Administration & Property at the Housing and Development Board.

NOTE

1. The Concept Plan is the long-term strategic development plan for Singapore. It has guided Singapore’s physical development since 1971 and is revised every 10 years.

Simon Longman

COMMUNITY IN BLOOM

Community In Bloom is a programme by the National Parks Board (NParks) to promote a gardening culture and a greater sense of civic ownership and participation among Singaporeans by encouraging and facilitating community gardening.

The therapeutic effects of gardens are well documented. Gardens relieve stress and stimulate the senses, making them ideal features in public housing communities. In addition, gardening provides a form of expression, physical activity and release that helps people heal mentally and physically and stay active, particularly in their senior years. An NParks survey showed that at least one in two respondents grows plants and a significant proportion (53%) is keen to participate in Singapore's greening efforts, for example, through planting, maintenance upkeep, volunteering and funding.


Community In Bloom brings together public and private sector organisations,

as well as volunteer groups to promote gardening among residents, students and workers, with NParks providing guidance and advice. Gardening interest groups collaborate to provide opportunities for people of diverse backgrounds to come together and share their gardening knowledge, forming a self-help network among residents, schools and organisations in maintaining the gardens. The gardens are safe outdoor spaces on public or private lands, where neighbours meet to grow and care for ornamental and flowering plants, vegetables, herbs/spices and other plant species. The gardeners take initiative and responsibility for organising, maintaining and managing the garden area.

COMMUNITY GARDENING, FRUITFUL RESULTS

The response towards Community In Bloom has been encouraging. Since its inception in 2004, communities that

participated in the programme have witnessed a number of positive changes: neighbours returning to outdoor green spaces; school teachers using gardens as outdoor classrooms; daycare providers integrating outdoor play with indoor activities; and senior citizens gathering and socialising in the gardens.

These are testaments of an enhanced living environment, increased community involvement and better neighbourhoods. Communities involved in the programme have grown closer and are collectively proud of what they have created. It is this sense of joy and spirit of togetherness in gardening that will help to transform our Garden City into a “City in A Garden”. 

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Cecilia Tortajada

Water Management in Singapore

Singapore has developed from a water-scarce developing nation to a world leader in the field of water management in the space of three decades. Dr Cecilia Tortajada reviews the city-state's water practices and strategies in detail.

With a territory size of just 700 square kilometres (km²), Singapore is a water-scarce country not because of lack of rainfall (2,400 millimetres/year), but because of the limited amount of land area where rainfall can be stored. One of the main concerns of the Government has been how to provide clean water to its population, which currently consumes about 1.36 billion litres of water per day.

Singapore imports its entitlement of water from the neighbouring Malaysian state of Johore. Under agreements signed in 1961 and 1962, Singapore can transfer water from Johore for a price of less than 1 cent per 1,000 gallons until the years 2011 and 2061 respectively.^{1,2,3}

Long-term security of water is an important consideration for Singapore. As a result, the country has developed plans for enhancing water security and self-

sufficiency through increasingly more efficient water management practices, including the formulation and implementation of new water-related policies, and significant capital investments in infrastructure and technology.

One main reason for Singapore's success in managing its water resources is its concurrent emphasis on supply and demand management, including wastewater and stormwater management; institutional effectiveness; and an enabling environment which includes a strong political will, effective legal and regulatory frameworks, and an experienced and motivated workforce.

Singapore's entire water cycle is managed by the Public Utilities Board (PUB), a public sector agency previously responsible for managing potable water, electricity and gas. In 2001, responsibilities for sewerage and drainage were transferred to PUB from the Ministry of the Environment, allowing PUB to develop and implement a holistic policy, including protection and expansion of water sources; catchment, demand, stormwater and wastewater management; desalination; and public education and awareness programmes. At present, PUB also has an in-house Centre for Advanced Water Technology, with about 50 expert staff members who provide it with the necessary research and development support.

SUPPLY MANAGEMENT: CATCHMENT, DESALINATION AND RECLAMATION, AND LOSS REDUCTION

Singapore is one of the very few countries that looks at its supply sources in their totality. In addition to importing water from Johor, it has made a determined attempt to protect its water sources in terms of quantity and quality on a long-term basis, expand its available sources,⁴ use technological developments to increase water availability, improve water quality management, and steadily lower production and management costs.

Over the years, there has been an increasing emphasis on catchment management. Protected and partially protected catchment areas are well demarcated and gazetted,⁵ and no pollution-causing activities are allowed in such areas. At present, half of the land area of Singapore is considered to be protected and partly protected catchment. This ratio is expected to increase to two-thirds by 2009.

Desalination is becoming an important component for augmenting and diversifying available water sources. In late 2005, the Tuas Desalination Plant, the first municipal-scale seawater desalination plant, was opened at a cost of S\$200 million. Designed and constructed by a local water company, it is the first designed, built, owned and operated desalination plant in Singapore. The process used is reverse

osmosis and it has a capacity of 30 million gallons per day (mgd). The cost of the desalinated water during its first year of operation was S\$0.78/cubic metres (m³).⁶

Faced with the strategic issue of water security, Singapore considered the possibility of recycling wastewater (or used water) as early as the 1970s. It opted for proper treatment of its effluents instead of discharging them to the sea.⁷ However, the first experimental recycling plant was closed in 1975 because it proved to be uneconomical and unreliable – the technology was simply not available three decades ago to make such a plant practical.

In 1998, PUB and the Ministry of the Environment formulated a reclamation study. Reclaimed water from a prototype plant, started in 2000, was monitored regularly over a period of two years. An expert panel endorsed the safety and potability of the NEWater, a term now used for the treated used water. In 2002, the expert panel confirmed that NEWater was safe and could be used as a sustainable source of water supply for Singapore. Its quality meets the water quality standards of the Environmental Protection Agency of the United States and the World Health Organisation.⁸

PUB decided to collect, treat and reuse used water on an extensive scale, a step that very few countries have taken. Singapore is 100% sewered to collect all used water. It has constructed separate

drainage and sewerage systems to facilitate used water reuse on an extensive scale. From 2002 to 2004, the amount of treated wastewater increased from 1.315 to 1.369 million cubic metres (mcm)/day.⁹

Used water is reclaimed after secondary treatment by means of advanced dual-membrane and ultraviolet technologies. While NEWater is safe to drink quality-wise, it is also used for industrial and commercial purposes. Since its purity is higher than tap water, it is ideal for certain types of industrial manufacturing processes, such as semiconductors which require ultra pure water. It is also economical for such plants to use NEWater since no additional treatment is necessary to improve its quality. The first year tender price for NEWater from Singapore's Ulu Pandan plant was S\$0.30/m³, which is significantly less than the cost of desalinated water. The selling price of NEWater is S\$1.15/m³, which covers production, transmission and distribution costs.

Because the production cost of NEWater is less than that of desalinated water, future water demands will be met with more NEWater rather than with the construction of desalination plants. With more industries using NEWater, water saved can be used for domestic purposes.

A small amount of NEWater (2 mgd in 2002 and 5 mgd in 2005, or about 1% of the daily consumption of the country) is

blended with raw water in the reservoirs, which is then treated for domestic use. It is expected that by 2011, Singapore will produce 65 mgd of NEWater annually, 10 mgd (2.5% of water consumption) for indirect domestic use,¹⁰ meeting 15% of Singapore's water needs.¹¹

The supply of water has been further expanded by reducing unaccounted for water (UFW), which is defined as actual water loss due to leaks, and apparent water losses arising from meter inaccuracies. Unlike other South and Southeast Asian countries, Singapore simply does not have any illegal connections to its water supply systems.

Only 4.5% of water in Singapore is unaccounted for — this is a level that no other country at present can match.

In 1990, UFW was 9.5% of the total water production.¹² Even at that level, it would have been considered to be one of the best examples in the world at the present time. By 2006, PUB had managed to lower UFW to 4.5%. This is a level that no other country can match at present. By comparison, in England and Wales, the only region in the world which has privatised its water more than a decade ago, the best level any of its private sector companies have managed to achieve is more than twice that of

Singapore's. Similarly, UFW in most Asian urban centres now range between 40% and 60%.

DEMAND MANAGEMENT

Concurrent to the diversification and expansion of water sources, PUB has put in place well-thought out and comprehensive demand management policies. It is useful to review the progress of tariffs for water from 1997 to 2000.

Before 1 July 1997, the first 20 m³/month of domestic consumption for each household was charged at S\$0.56/m³. The next block of 20 to 40 m³ was charged at S\$0.80/m³. For consumption of more than 40 m³ and for non-domestic consumption, it was S\$1.17/m³.

Effective from 1 July 2000, domestic consumption of up to 40 m³/month and non-domestic uses were charged at a uniform rate of S\$1.17/m³. For domestic consumption above 40 m³/month, the tariff became S\$1.40/m³, which is higher than for non-domestic consumption. The earlier cheaper block rates for the first 40 m³ of domestic consumption was eliminated.

In addition, the Water Conservation Tax (WCT), levied by the Government to reinforce the water conservation message, was 0% for the first 20 m³/month consumption prior to 1 July 1997. For consumption over 20 m³, WCT was set at 15%. Non-domestic users paid a WCT levy of 20%.

Effective 1 July 2000, WCT was increased to 30% of the tariff for the first 40 m³ for domestic consumers and all consumption for non-domestic consumers. However, domestic consumers pay 45% WCT when their water consumption exceeds 40 m³/month. In other words, there is now a financial disincentive for higher water consumption by households.

Similarly, the Water-Borne Fee (WBF), a statutory charge prescribed to offset the cost of treating used water and for the maintenance and extension of the public sewerage system, was S\$0.10/m³ for all domestic consumption prior to 1 July 1997. Effective 1 July 2000, WBF was increased to S\$0.30/m³ for all domestic consumption.

The impact of these tariff increases on consumers can be seen in Table 1:

TABLE 1. AVERAGE MONTHLY CONSUMPTION AND BILLS PER HOUSEHOLD, 1995, 2000 AND 2004

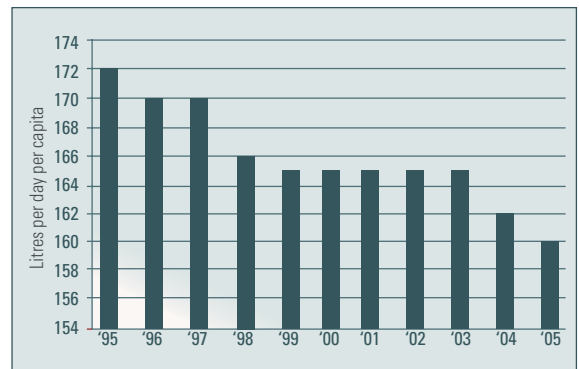
Item	1995	2000	2004
Average monthly consumption (m ³)	21.7	20.5	19.3
Average monthly bill, of all taxes	S\$14.50	S\$31.00	S\$29.40

Source: PUB, 2005, Personal communication.

Average monthly household consumption steadily declined from 1995 to 2004. The consumption in 2004 was 11% less than in 1995. During the same period, the average monthly bill more than doubled.

Figure 1 shows the domestic water consumption per capita per day from 1995 to 2005. It shows a steady decline in per capita consumption, from 172 litres per day per capita (lpcd) in 1995 to 160 lpcd in 2005, because of the implementation of demand management practices.

FIGURE 1. DOMESTIC WATER CONSUMPTION, 1995 TO 2005



These statistics indicate that the new tariffs had a notable impact on the behaviour of the consumers, and have turned out to be an effective instrument for demand management. This is a positive development since the annual water demands in Singapore increased steadily, from 403 mcm in 1995 to 454 mcm in 2000. The introduction of demand management policies resulted in the lowering of this demand, which declined to 440 mcm in 2004. Water tariffs have not been raised since July 2000.

In terms of social equity, the Government provides specially targeted

help for lower-income families. Households living in one- and two-room flats receive higher rebates during difficult economic times. For hardship cases, affected households are eligible to receive social financial assistance from the Government.

The current tariff structure used by PUB has several distinct advantages, among which are the following:

- **Pay-as-you-use:** There is no low “lifeline” tariff, used in many countries with the rationale that water should be affordable as a basic necessity. Such a tariff in effect subsidises consumers who can afford to pay for the actual quantity of water they consume. In Singapore, the poor who cannot afford to pay for the current water tariffs receive a targeted subsidy instead. This is much more efficient socio-economically, instead of providing subsidised water to all households irrespective of their economic conditions.
- **Disincentive to over-consume:** The current domestic tariff of water consumption up to 40 m³/month/household is identical to the non-domestic tariff. In other words, commercial and industrial users do not subsidise domestic users, which is often the case in many other countries. However, households who use more than 40 m³ of water per month are subject to higher rates than commercial and industrial rates, as well

as more WCT per unit of consumption beyond 40 m³/month. These penalties have a perceptible impact on household behaviour in terms of water conservation and overall demand management.

- **Differentiated costing:** The WBF is used to offset the cost of treating wastewater and for the maintenance and extension of the public sewerage system. For non-domestic consumption, this fee is double that of domestic consumption due to the fact that it is more difficult and expensive to treat non-domestic wastewater.
- **Financial viability:** Revenue from WCT accrues to the Government. However, a major component of the overall revenue collected through water tariffs accrues to PUB for operation, maintenance costs and new investments. This is in sharp contrast to many countries where internal cash generation of water utilities to finance water supply and sanitation has steadily declined.

OVERALL GOVERNANCE

An institution can only be as efficient as its management and the staff that work for it, and the overall social, political and legal environment within which it operates. Water management in a country can only be efficient if its holistic management of other development sectors – be they agriculture, energy or industry – is just as

effective. The current implicit global assumption that water management can be improved unilaterally when other sectors remain inefficient is simply not realistic.

The overall governance of the water supply and wastewater management systems in Singapore is exemplary in terms of its performance, transparency and accountability.

Human Resources

Most water utilities in Asia have a limited say over their own staff recruitment and remuneration – often owing to political interference, union activity or lack of administrative mandate. Corruption is also endemic in many places. As a result, these utilities are beset by problems such as lack of competence, inability to recruit qualified staff, or overstaffing. This results in inefficiency and low productivity.

PUB offers a competitive remuneration and benefits package benchmarked to market rates, provides strong performance incentives and pro-family policies, and is committed to train its staff for their professional and personal development. As a result, it has managed to attract and retain good performers and ensure good organisational performance. With a good remuneration package and a strong national and organisational anti-corruption culture, corruption is also not an issue in PUB.

Capital Investment

The Singapore experience indicates that given autonomy and other appropriate enabling environmental conditions, the utilities are able to be not only financially viable but also perform their tasks efficiently. Such an approach has enabled PUB to fund its new capex investments over the years from its own income and internal reserves. In 2005, for the first time, PUB tapped the commercial market for a S\$400-million bond issue. The budgeted capex for the year 2005 was nearly S\$200 million.

Outsourcing

Unlike many other similar Asian utilities, the PUB has extensively used the private sector where it did not have special competence or competitive advantage in order to strive for the lowest cost alternative. Earlier, the use of the private sector for desalination and wastewater reclamation was noted. In addition, specific activities are often outsourced to private sector companies. According to the Asian Development Bank (November 2005),¹³ some S\$2.7 billion of water-related activities were outsourced over the “last four years”, and another S\$900 million will be outsourced during “the next two years” to improve water services.

Overall Performance

No matter which performance indicators

are used, PUB invariably ranks in the top 5% of all urban water utilities of the world in terms of its performance. A few of these indicators include:

- 100% of population has access to drinking water and sanitation;
- 100% metering of the entire supply system, from water works to consumers;
- unaccounted for water as a percentage of total production was 4.5% in 2006; and
- monthly bill collection efficiency was 99% in 2004.


CONCLUSION

Viewed from any perspective, any objective analysis has to conclude that water supply and wastewater management practices in Singapore have been exemplary in recent years. Its water demand management practices are unquestionably one of the best, if not the best, whether among the developed or developing countries, irrespective of whether a public or private sector institution is managing the water services. Singapore has successfully managed to find the right balance between:

- water quantity and water quality considerations;
- water supply and water demand management;
- public sector and private sector participation;
- efficiency and equity considerations;

- strategic national interest and economic efficiency; and
- strengthening internal capacities and reliance on external sources.

In other words, the country has successfully implemented what most water professionals have been preaching in recent years.

By ensuring efficient use of its limited water resources through economic instruments, adopting the latest technological development to produce “new” sources of water, enhancing storage capacities by proper catchment management, practising water conservation measures, and ensuring concurrent consideration of social, economic and environmental factors, Singapore has reached a level of holistic water management that other urban centres will do well to emulate. 

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for poverty alleviation through integrated regional development, environmental and social policies related to water resources development, and public participation and capacity building in the water sector.

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NOTES

1. "The Tebrau and Soudai Rivers Agreement between the Government of the State of Johore and the City Council of the State of Singapore signed on 1 September 1962", <http://www.channelnewsasia.com/cna/parliament/relationsdocuments.htm>
2. "The Johore River Water Agreement between the Johore State Government and City Council of Singapore signed on 29 September 1962", <http://www.channelnewsasia.com/cna/Parliament/relations/documents.htm>
3. Malaysia, Act of Parliament No. 53 of 1965, *Constitution of Malaysia (Singapore Amendment) Act, 1965: An Act to amend the Constitution of Malaysia and the Malaysia Act*, August 9, 1965.
4. Lee, M. F. and Nazarudeen, H. "Collection of urban storm water for potable water supply in Singapore." *Water Quality International*, May/June (1996): 36-40.
5. Appan, A. "A total approach to water quality management in partly-protected catchments." (paper presented at The Singapore Experience, International Workshop on Management and Conservation of Urban Lakes, Hyderabad, India, June 16-18, 2003).
6. Lee, Poh Onn, "Water management issues in Singapore." (paper presented at Water in Mainland Southeast Asia, Siem Reap, Cambodia, November 29 – December 2, 2005).
7. Trade Effluents Regulations (1976) Water Pollution Control and Drainage Act, Act 29/75, Pub. No. SLS 29/76, Republic of Singapore.
8. Public Utilities Board, *Annual Report 2002*, (Singapore: PUB, 2002).
9. Ministry of the Environment and Water Resources, *Key Environmental Statistics 2005*, (Singapore: MEWR, 2006).
10. Public Utilities Board, *Annual Report 2003*, (Singapore: PUB, 2003).
11. Editor's Note: With the opening of the latest plant in March 2007, the four NEWater plants can meet more than 15% of Singapore's water demand today, well ahead of the original target date of 2010. PUB will also bring forward the construction of the fifth NEWater Factory at Changi which will produce 50 million gallons per day. Hence by 2011, the NEWater plants will have the combined capacity to meet 30% of Singapore's water needs, double the original target. The ramp-up of NEWater capacity has yielded significant operational efficiencies and economies of scale. From 1 April 2007, PUB will reduce the price of NEWater from S\$1.15 to S\$1.00/m³. This will benefit all NEWater customers, and will translate into lower costs for businesses. [<http://www.channelnewsasia.com/stories/singaporelocalnews/view/264240/1.html>]
12. Khoo, Teng Chye, "Water Resources Management in Singapore." (paper presented at the Second Asian Water Forum, Bali, Indonesia, August 29 – September 3, 2005).
13. Asian Development Bank, "Country Water Action: Singapore. Technology Turns Water Weakness to Strength, November 2005," <http://www.adb.org/water/actions/SIN/Technology.asp> (accessed March 15, 2007).



Interview with Asit K. Biswas

Singapore as a Global Water Knowledge Hub

One of the world's leading authorities on water, Professor Asit K. Biswas is also the President of the Third World Centre for Water Management in Mexico. Speaking to Ethos, he argues that Singapore has the know-how and track record to position itself as the water hub of the world.

Given that Singapore is a small water-scarce nation, how can it better manage its water resources?

Overall, Singapore's water management is already one of the best in the world. In water management, Singapore has made a transition from a developing country to a developed country in only 30 to 40 years. In contrast, much of the developing world has made only incremental progress during the past decades. In areas such as technological innovation, institutional arrangements, pricing, leadership, and stakeholders' participation, what Singapore has achieved during the last 30 years is most commendable.

Of course, it is much easier to manage a small city-state like Singapore compared to big countries like India, China or Brazil. However, size itself is not the only consideration because most of the Central American, Caribbean and Pacific Island states are often no bigger than Singapore, and yet none of them have managed to make a fraction of the progress that Singapore has made in water and

wastewater management in recent decades.

It will be progressively more difficult to improve radically on what Singapore has already achieved, especially when you consider that the rest of the world is still trying to achieve much of what Singapore has already accomplished. There is, of course, always room for improvement. For example, per capita water consumption in Singapore can be further reduced to around 135 litres, from around 158 litres at present. With increasing population and industrial activities and limited freshwater resources, further reduction in water demand will be necessary. Already, a few European cities have brought down their per capita water consumption to the 130 to 135 litres range.

How well does Singapore's water management compare with best practices around the world? What can we learn from other approaches elsewhere?

Water management in Singapore is now significantly better than the rest of the developing world and much of the developed world. Indeed, it is often claimed that the

private sector manages water better than the public sector, yet Singapore's Public Utilities Board (PUB) is a public sector organisation, and its performance record is simply superb. In fact, private sector companies would do well to emulate a public sector institution like PUB.

Let us compare the performance of PUB with the performance of private sector water companies in England, which have been privatised completely for about 20 years. In Singapore, the water loss from the system is around five per cent. For Thames Water, the biggest UK private sector water company, the loss is nearly six times this amount. PUB, a public sector company, has been performing much better than a major international private sector company with a long track record. The whole of Singapore is now sewered. Wastewater and storm-water are now collected and reused much more extensively than in nearly all other developed countries. The local population accepts the idea of properly treated wastewater for domestic consumption. Viewed from any perspective, these are remarkable achievements.

Singapore, in my view, now has some unique opportunities in the water sector which it should consider pursuing. Because Singapore has succeeded so well, it should consider very seriously how these management techniques, technology, economics, pricing policies and public participation processes can be used in other

countries, both developing and developed. Singapore needs to carefully and objectively document what it has already done, how it has done this, and with what costs and results. These analyses will be of great value to the rest of the world.

For example, there is a great deal of

Singapore, in recent years, has been a trendsetter. It now has tremendous economic opportunity to export its know-how to many other countries.

discussion on the advanced technology used in Singapore for managing its water cycle. But with NEWater, the most important issue is not technology, though it is important. The technology is well-known and can be bought off the shelf. The critical issues are public psychology, institutional dynamism and leadership, and public acceptance of the use of treated water.

Technologically, it has been known for years that if wastewater is treated properly, its quality should be better than drinking water. Globally, however, we have failed to convince the public that there is nothing wrong in using properly treated wastewater. Major industrialised countries like the United States and Australia have thus far failed to get the public to accept

the concept of reused water. Yet Singapore has managed to successfully marry technological possibilities with public acceptance. How this has been done is of great interest to the world.

What opportunities are there for Singapore to take advantage of its head start in the field of water management?

Singapore, in recent years, has been a trendsetter. It now has a tremendous economic opportunity to export its know-how to many other countries. They can significantly improve their water management efficiencies by adopting the Singapore experience with appropriate modifications. These countries will be willing to pay for good technical and management advice from Singapore to improve their water management practices and processes. Such an approach will benefit Singapore as well as the rest of the world.

But most of the world at present does not know what Singapore has achieved. Thus, considerable effort needs to be expended to make the world aware of the progress made. In my view, PUB has decisively outperformed the multinational companies that are now providing water management services to the world.

A small state like Singapore must find good market niches, and urban water management is a very special niche that Singapore can now exploit. The country needs to make a determined effort to market its expertise to the rest of the world.

This is being done to a certain extent, but much more could be done. In my view, the current effort needs to be increased by 60% to 80% within four or five years to show positive results.

The second possibility is to be a knowledge hub for water — something the world lacks at present. Many universities in the US and the UK are doing good theoretical research; yet these types of research will not solve the developing world's water problems promptly or cost-effectively, because the boundary conditions are very different. These problems can be solved only by applied research that is specifically focused on the circumstances of the developing world.

Asia's water problems, for instance, climate-wise, are very different. Countries like Singapore, Japan, India, Bangladesh and Pakistan are all in the monsoon region. If we compare the annual rainfall figures, for example, between London and Delhi, they are not that dissimilar, differing by only about 15%. But the main difference for water management between these two locations is this: in Delhi, nearly all the annual rainfall occurs in about 80 hours (albeit not consecutively), whereas in London, it occurs over the entire year. Thus, water management practices needed in Delhi are very different from those in London. For monsoon areas like Delhi, the main consideration has to be how to collect this immense amount of rainfall within a

very short period, then store it, treat it and use it over the entire year, most of which is rainless. Thus, the water management requirements for the monsoon regions are very different compared to countries in temperate climates.

Regrettably, very few institutions in Asia and the developing world are engaging in good quality research that will solve their own water problems; many institutions from India to Japan and China are mostly trying to follow the type of research conducted at Oxford or Harvard. Asia needs to develop its own research agenda which will help to solve its own water issues, and should not adopt Western practices and solutions blindly.

In addition, no single water institution exists anywhere in the world that is looking at the water problems of the future, either for developed or developing countries. They invariably focus on how we did things in the past, and expect developments to occur only incrementally. But there is no question that within the next 20 years, water management practices and processes will change more than what we have witnessed during the past 2,000 years. There is a big gap between what is being done and what should be done in terms of water research.

Singapore has a golden opportunity right now to become the water knowledge

hub for the world, including focusing on applied research on water management and looking into future water problems and policies needed to solve them. It already has outstanding institutions like PUB. There is absolutely no reason why an established institution in Singapore should not become

If Singapore can synergistically combine the water expertise it currently has with new water-related activities, it can become the water capital of the world within the next five to six years.

the pre-eminent global authority in the area of water policy and governance, which the world at present simply does not have.


Singapore also has extremely good tourism infrastructure. It is surrounded by water. It has done remarkably well in urban water planning and management. Perhaps it could also consider a water festival where the main focus could be on water-related activities. The city could become a tourist destination during the water festival.

But along with the water festival, Singapore needs a main event, similar to an international forum such as the World Economic Forum, held in Davos, Switzerland, every winter. There is nothing similar to the Davos Forum in the field of water anywhere in the world, but it is now needed. The Singapore Water Forum would

attract leading water policymakers, experts from public and private sectors, academia, industry, as well as non-governmental organisations and the media from across the world.

There are many water-related professional associations in the world at present. They could be invited to come around the time of the Singapore Water Festival and Singapore Water Forum to discuss water-related issues. It should be possible to make Singapore a model for the water world, and a centre for knowledge on water for the world. It can be done, and should be done.

There is already some thinking in this direction but it could be more ambitious. There is no question that great potential exists to put Singapore on the world map in terms of water-oriented knowledge generation, synthesis, dissemination and application. Singapore can contribute a great deal of knowledge and management expertise, which is now missing in the water field.

My view is if Singapore can synergistically combine the water expertise it currently has with new activities like a Singapore Water Festival, or a Singapore Water Forum, and a few similar water-related activities, it can become the water capital of the world within the next five to six years. This is a very exciting prospect. 

Professor Asit K. Biswas is President of the Third World Centre for Water Management in Mexico. He has been a senior advisor to 17 governments, six heads of the United Nations Agencies, and most major international organisations. One of the world's leading international authorities on water, he is the founder of *International Journal of Water Resources Development* and has been its Editor-in-Chief for the past 22 years. He authored and edited 69 books and has published over 600 scientific and technical papers. In 2006, Prof Biswas was honoured with the Stockholm Water Prize for "his outstanding and multi-faceted contributions to global water resource issues", the prestigious Aragon Environment Prize of Spain, the Man of the Year Award of Canada, and the honorary Doctor of Science degree from the University of Strathclyde, Glasgow.

This article is excerpted from an interview conducted in Singapore (15 January 2007) by Sheila Ng, Assistant Editor, ETHOS.



Anthony T. H. Chin

Implications of Prospect Theory on Road Pricing

While the economic costs of traffic congestion are well documented, the effectiveness of economic instruments, such as road pricing, in containing traffic congestion is less clear. Prospect Theory, a leading behavioural model in experimental economics, may explain inelastic driver behaviour in response to road pricing during peak hours. It may also shed light on the phenomenon of consumers who continue driving despite its higher economic cost relative to other modes of transport.

PROSPECT THEORY AND BEHAVIOUR

Prospect Theory observes that individuals tend to be “loss averse”: in other words, they are more sensitive to losses than to gains. Indeed, empirical studies suggest that losses are valued at twice that of gains. Furthermore, Prospect Theory demonstrates

a Certainty Effect: gains and losses are accorded more psychological value when they are certain than when they are less probable. Certainty increases the pain of losses while increasing the appeal of gains. In the event of loss, this Certainty Effect can lead to more risk-taking behaviour,

Road Pricing Then and Now

As of 2005, Singapore has 3,234 kilometres of road and 754,992 motor vehicles, of which automobiles make up about 50%. Road pricing, first introduced with the Area Licensing Scheme in June 1975, has since been extended to major expressways with the Road Pricing Scheme.

In 1998, Electronic Road Pricing (ERP) came into effect, with 48 gantries in operation as of 2005. ERP rates are revised every three months to ensure traffic speeds remain within the desired speed limits of 45 to 65 kilometres per hour (kph) for expressways and 20 to 30 kph for arterial roads.

rather than the risk-averse behaviour predicted by standard economic theory under the same circumstances.

Endowment Effect

One implication of Prospect Theory is that people often demand much more to give up an object compared to the amount they are willing to pay to acquire it – this is known as the endowment effect. The existence of this effect contradicts standard economic theory, which assumes that for a given good, the minimum price people are willing to accept is identical to the maximum price people are willing to pay.

This phenomenon (also known as status quo bias) is one reason for the inelastic response of drivers to road pricing. Drivers are willing to pay much more in order to maintain their preferred arrival times (PAT) when travelling, than to adjust their

schedule [for instance, to reschedule trip departure times in order to incur lower Electronic Road Pricing (ERP) charges]. This is further supported by Dube,² whose findings show that people are averse to the risk of losing time.

This suggests that in order for road pricing to be effective, **travel times relative to road pricing need to be consistent and stable**, in order to minimise uncertainty – this is more likely to alter driver behaviour.

Mental Accounting

Drivers may also simply treat road pricing costs differently when evaluating their overall financial activities. Individuals tend to assign their expenditures into different “brackets” or categories (e.g., travel, food or entertainment) for evaluation on a regular basis, be it daily, weekly or monthly. Evaluations made frequently have

implications on perceived consumption. Thaler³ suggests that individuals frame their decisions in three different ways, known as “accounts”: a minimal account, a topical account and a comprehensive account. In the minimal account, only the differences between two possible options are examined, disregarding all other common features. In a topical account, possible options are evaluated using a reference point that is determined by the context of the situation. Only in the comprehensive account are options evaluated by incorporating all other factors such as wealth, possible states and externalities. The outcome of this “mental accounting effect” is that the value of money is context-dependent. In terms of the driver’s mental accounting, a dollar saved by avoiding priced road use does not have the same utility as a dollar saved in another category of spending.

In other words, drivers may not evaluate the increase in their travel costs relative to their total wealth or alternative financial activities; instead, they may value the additional cost of road pricing less than the potential loss of travel time in avoiding peak hour road use.

Sunk Cost

Finally, even if driving were no longer economically optimal, sunk costs may deter

the driver from switching away from private transport. Thus, the driver will continue to drive, resulting in an inelastic demand when faced with road pricing.

Drivers may value the additional cost of road pricing less than the potential loss of travel time in avoiding peak hour road use.

This sunk cost effect is manifested in a greater tendency to continue an endeavour once an investment in money, effort or time has been made.⁴ Economic theory postulates that sunk costs ought to be irrelevant in the calculation of utility, since the costs cannot be recovered. Instead, only incremental costs ought to be included. Empirical evidence demonstrates, however, that people do base their decisions on sunk costs. The reluctance of drivers to switch from driving to alternative modes of transport is made worse by the sunk cost effect of “lost” investment in the automobile.

This situation can also be explained in terms of Prospect Theory. Having already made a once-off investment during the purchase of the vehicle, Arkes⁵ suggests that additional losses owing to investment will do little to depress the driver’s utility, while any potential gain will improve the driver’s utility considerably. Furthermore, endowment effects mean that although


investments in automobiles may have depreciated on paper, people are unwilling to translate paper losses into real losses. While a consumer would be better off selling his automobile, the effect dictates that the price at which he would be willing to sell his car will be far higher than any buyer's valuation and willingness to pay. In such a context, drivers have an incentive to continue driving despite the negative economic utility, instead of selling their vehicles. This situation may be compounded by a series of rebates on the cost of automobile ownership in response to the government's focus on regulating road usage. While the reduction in taxes and costs were aimed at offsetting the automobile owner's perception of losses with the imposition of road pricing, it inadvertently led to an increase in the demand for automobiles. Prospect Theory would suggest that purchase decisions for automobiles are based on upfront costs while tending to ignore the running costs, since upfront costs are considered as being more salient at the time of automobile purchase while daily usage costs are discounted. The daily costs of road pricing, which tend to be narrowly "bracketed" in daily accounting, seem small in comparison with the huge cost of purchasing the vehicle; this difference discourages drivers

from giving up their cars. Drivers are thus more likely to continue driving, even though it may be optimal to use public transport.

Prospect Theory would suggest that purchase decisions for automobiles are based on upfront costs while ignoring the running costs, since upfront costs are considered as being more salient at the time of automobile purchase while daily usage costs are discounted.

CONCLUSION

In response to road pricing, drivers have been shown to be unwilling to switch from their status quo, whether it be a change in departure times or a change in mode of transport. They are also averse to risking a loss of time, given the uncertainty of alternative schedules, other modes of transport, or traffic congestion conditions. They are thus more likely to continue driving at peak hours on the same roads. Sunk cost and mental accounting effects also skew drivers' evaluation of the true costs of car ownership, resulting in the tendency for car owners to continue driving. All of these behaviours have an impact on the effectiveness of road pricing.

Prospect Theory suggests that for road pricing to be more effective, charges will have to be set according not only to inelastic demand but to the high value drivers place on the loss of travel time. It must be noted, however, that such an effort must be accompanied by a holistic approach that promotes a comprehensive public transport network, high parking charges within the Central Business District, and an increasing awareness on the social costs of traffic congestion on the environment. 

This article was adapted from a longer study based on a series of experiments replicating various conditions under road pricing. The three experiments tested for the effects of sunk cost, Prospect Theory, and the endowment effect on drivers.

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NOTES

1. Kahneman, D. and A. Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica* 47(1979): 263-92.
2. Dube, L., LeClerc, F., and B. Schmitt, "Waiting Time and Decision Making: Is Time like Money?," *Journal of Consumer Research* 22 (1995): 110-19.
3. Thaler, R. H., "Mental Accounting Matters," *Journal of Behavioral Decision Making*, 12(1999): 183-206.
4. H. and C. Blumer, "The Psychology of Sunk Costs," *Organizational Behaviour and Human Decision Processes* 35 (1985): 124-40.
5. H. and C. Blumer, "The Psychology of Sunk Costs," *Organizational Behaviour and Human Decision Processes* 35 (1985): 124-40.

FURTHER READINGS

- Duxbury, D., K. Keasey, , H. Zhang, and S.L. Chow, "Mental accounting and decision making: Evidence under reverse conditions where money is spent for time saved," *Journal of Economic Psychology* 26(2005): 567-80.
- Knetsch, J.L., "The Endowment Effect and Evidence of Nonreversible Indifference Curves," *American Economic Review* 79(1989): 1277-84.
- Knetsch, J.L., "Anomalies: The Endowment Effect, Loss Ascenario and Status Quo Bias," *Journal of Economic Perspectives* 5(1991): 193-206.
- Olszewski, P. and L. Xie, "Modelling the effects of road pricing on traffic in Singapore," *Transportation Research Part A: Policy and Practice* 39(2005): 755-72.
- Thaler, R. H., "Anomalies: Seasonal Movements in Security Prices II: Weekend, holiday, turn of the month, and intraday effects," *Journal of Economic Perspectives* 1(1987): 169-77.
- Thaler, R. H., "Anomalies: Savings, Fungibility, and Mental Accounts," *Journal of Economic Perspectives* 4(1990): 193-205.
- Tversky, A. and D. Kahneman, "The framing of decisions and the psychology of choice," *Science* 211(1981): 453-8.
- Tversky, A. and R.H. Thaler, "Anomalies: Preference reversals," *Journal of Economic Perspectives* 4(1990): 201-11.
- Vickrey, W, "Congestion Theory and Transport Investment," *American Economic Review* 59(1969): 251-60.



Paul Barter

Wanted — An Ambitious Vision for Singapore's Public Transport

In order for public transport in Singapore to compete with the lure of private cars, a radical overhaul in regulation and organisation may be necessary.

Momentous issues lie behind the apparently dry choices facing the experts now reviewing Singapore's public transport arrangements. As a large, compact city, Singapore is approaching limits to road capacity expansion. Increasingly, public transport will be called upon to compete with cars for customers who have a choice. To do this successfully, Singapore will have to adopt a much more ambitious approach to the organisation and regulation of public

transport. Existing arrangements are almost certainly not up to the task and fine-tuning them will not be enough.

This article discusses a bold yet feasible vision for public transportation in Singapore. It proposes the introduction of real competition to the public transport market. At the same time, it requires a stronger role for the public sector in planning a highly-attractive, comprehensive and well-integrated transport system.

SUCCESS SO FAR DESPITE HUMBLE ASPIRATIONS FOR PUBLIC TRANSPORT

Singapore’s public transport has done quite well even without a very ambitious vision. It aims to be a basic utility, providing no-fuss mobility to the masses who do not own cars. Since the 1970s, this modest ambition has combined very well with efforts to contain car ownership and usage. In the process, a steady stream of improvements, including the expanding Mass Rapid Transit (MRT) network, has been successfully delivered to a customer base of mostly non-car owners who have become increasingly middle-class in profile.

This approach, however, will soon face growing tensions. Social and economic changes and shifts in vehicle tax policy are reducing the number of captives to public transport. For example, as car usage costs go up while cost barriers to car ownership go down, we are likely to see larger numbers of relatively low-income car-owning households. At the same time, larger numbers of relatively high-income households may choose not to own cars, encouraged by the expanding MRT network and the boom in centrally-located premium housing options that serve an increasingly attractive “cosmopolitan” inner-city lifestyle. These and other “choice” users of public transport will have high expectations of public transport. They are more likely to demand a higher frequency of services and shorter waiting times.

SEOUL’S 2004 BUS SYSTEM REFORMS

Seoul in South Korea has a large subway and, until 2004, had a bus network run by numerous private operators with poor coordination. Since the mid-1980s, it has faced the challenge of rapid increases in car ownership. Pucher et al¹ described reforms in 2004 that reorganised Seoul’s bus services. Inspired by integrated urban public transport systems in Scandinavia, Germany and Switzerland, the changes focused on improved, more customer-oriented service, integration and a shift to a hub-and-spoke network structure. Regulatory reforms were also a key feature.

‘ The Seoul Metropolitan Government greatly increased its control over bus routes, schedules, fares, and overall system design. It introduced what it calls a “semi-public operation system” that retains private bus firms but leaves route, schedule, and fare decisions to the Seoul Metropolitan Government. Moreover, it now reimburses bus firms on the basis of vehicle kilometre of service instead of passenger trips...(p.48) ’

The necessary monitoring and coordination is handled with an advanced application of Intelligent Transport System (ITS) technology, using Global Positioning System (GPS). Benefits claimed so far include impressive increases in bus speeds (especially on new Bus Rapid Transit corridors) and an upward trend in bus passenger numbers without a drop in subway use.

The authorities have already expressed concern that public transport needs improvement, but do not seem to be considering a fundamental restructuring of the system. This article argues that the institutional and regulatory arrangements to support public transport in Singapore require significant changes, if it is to meet the changing needs of its customers.

INTERNATIONAL ROLE MODELS FOR AMBITIOUS PUBLIC TRANSPORT

Where should we look for role models of superior public transport? Certainly not to automobile-dependent cities in North America or Australia, where public transport has largely admitted defeat and retreated to “niches”, such as serving radial work trips and providing welfare service for people without alternatives.

Public transport “paradises”, such as Hong Kong and Japan’s large cities, certainly offer some lessons but, surprisingly perhaps, not when it comes to the challenge of competing with private cars. The huge rail systems and tiny endowment of road space in Japan and the congestion and extreme urban density of Hong Kong (it has triple Singapore’s population per urbanised hectare) limit the appeal of cars and help to protect the role of public transport. Strenuous public transport promotion efforts are less necessary in such places than they would be here.

It is in places where the private car is a real threat and where public transport refuses to accept defeat that we find the most intense public transport innovation efforts. Some of the most energetic efforts have been in the inner cities of Central and Northern Europe, but Seoul and certain Latin American cities, such as Bogotá, have also taken dramatic steps. The best of these cities aim to make public transport a real competitor for cars in order to halt the loss of market share to private transport.

THE IMPORTANCE OF PUBLIC TRANSPORT INTEGRATION

Infrastructure, such as urban rail systems and Bus Rapid Transit (BRT), is a key aspect of efforts to improve public transport. The most ambitious approaches, however, also involve excellent, highly customer-oriented integration. In an integrated public transport system, the private car — and not other public transport operators — is seen as the primary rival. Highly-integrated public transport systems are planned and marketed as a unified whole and presented as a single brand image to the general public. Stockholm pioneered this approach in the 1960s and Zurich has taken it further.²

If public transport aims to become a comprehensive mobility tool in competition with cars, strenuous efforts are required to ensure that transfers are simple, quick and reliable. Easier transfers

It is in places where the private car is a real threat and where public transport refuses to accept defeat that we find the most intense public transport innovation efforts.

are vital if the full range of destinations is to be served beyond just the city centre. This requires either high-frequency, regular service on all provisions or a carefully-coordinated, “timed-pulse” approach to scheduling in lower density areas.

One way to increase frequencies at low cost is via a shift to a more thoroughly “hub-and-spoke” network layout. However, this obviously requires more transfers, which must be made as easy as possible. Clearly, integration will also enhance efforts to improve service frequencies.

The role of unified marketing cannot be dismissed. Unified marketing seeks customer loyalty to the system as a whole, often with the help of heavily-discounted season passes. In addition, it assumes that information for trip planning is consolidated for the entire system. To this end, integrated systems generally make available high-quality, comprehensive maps of the entire public transport network to their customers.

Singapore’s public transport system

falls short in several of these respects. In the 1990s, Singapore’s transport planners proclaimed integration (or “seamlessness”) to be a key goal in the improvement of public transport. Significant progress was made, especially on physical integration of the bus and MRT systems, and on common ticketing. However, integration improvements seem to have stalled.

EXISTING ARRANGEMENTS LIMIT INTEGRATION AND IMPROVEMENT

Singapore’s existing public transport regulatory arrangements involve two operators facing fare regulation and service standards overseen by the Public Transport Council (PTC), a public agency at “arm’s length” from the Government. Each operator has a permanent monopoly within its own zone. The operators have considerable autonomy over the details of their routes and schedules since the service standards do not specify these in minute detail. Having two operators makes the PTC’s regulation task slightly easier by allowing their performance to be benchmarked against each other. This so-called “benchmark competition” does not, in fact, entail any competition at all. In addition, numerous charter, school and shuttle services fall outside the main system — each with their own information, payment and marketing structures.

This arrangement has delivered a good basic transport system, but it presents a

number of barriers to customer-oriented improvements. First, it hampers the creation of a more fully integrated system. In fact, rivalry between the two companies seems to be undermining existing integration, especially in information and marketing. Attractive season passes that cover the whole system seem unlikely. Each operator runs its own website and telephone service and neither provides substantial useful information about the services of the other.

Second, the existing arrangement allows only incremental steps to “raise the bar” and enhance service levels. Under the existing system, the Government cannot impose innovations, except indirectly via service standards. With only indirect tools available, it may be difficult to create a more ambitious, attractive and customer-oriented public transport system.

The problem of limited direct influence goes further because we may need to pursue cooperation beyond the public transport system. Public transport alone, even if truly excellent and highly integrated, may not be enough to dent significantly the appeal of private cars. Cooperation needs to be extended to all of the alternatives to private transportation. Since the late 1990s, in German cities such as Bremen and Hanover, and Swiss cities such as Zurich, cooperation has been expanding between public transport and its natural allies, namely car-sharing

together with car-rental, taxis, home-delivery services, car-free housing developments, and the humble modes of walking and bicycling. At its most ambitious, such cooperation creates an “alternative mobility package” with the aim of making a non-car owning lifestyle an attractive alternative to the car-owning lifestyle. Such efforts would be difficult to encourage under Singapore’s current public transport regulatory system.

IS COMPETITION COMPATIBLE WITH AMBITIOUS AND INTEGRATED PUBLIC TRANSPORTATION?

If the existing arrangement of a regulated monopoly with “benchmarking” limits integration and discourages more ambitious reforms, does this mean that any increase in competition would be even worse? Certainly, the “free-for-all” approach of open entry to the public transport industry or “competition in the market” would destroy integration and be disastrous.

Nevertheless, there is a way to enhance competition that is compatible with improved integration and customer-oriented improvements. It requires “competition for the market”, which involves competitive tendering for the right to operate different sets of public transport routes (see box story on “*Three Forms of Competition for the Market in Public Transport*”).

The simplest way to shift competition

THREE FORMS OF COMPETITION FOR THE MARKET IN PUBLIC TRANSPORT

Gross cost contracting has been used successfully for procuring bus services in a number of developed cities. It transfers the production risk to private operators but shields them from the full commercial risks. This has the advantage of facilitating integration and enlarging the pool of competition, which is particularly important in cities where there has been a long tradition of public provision and public transport markets are weak. Cost saving over public monopolies in the range of 20% to 30% is not uncommon with this type of competition.

Net cost contracts require the operator to bear most or all of the revenue risks and are also used in bus operations. They have the advantage of relieving the authorities of revenue risks and responsibilities and, in some circumstances, can act as a spur to improving operator performance. This kind of contracting, however, does make integration more difficult to achieve and requires safeguards to prevent operators indulging in revenue-share competition,

which may act against the passengers' interests, and to ensure that any loss-making service that is required is not neglected.

Franchising can be used for routes or groups of routes over a contiguous area. In the latter case, operators will usually have the freedom to plan services to maximise a combination of operational and passenger service efficiency. The role of the authority is limited to setting down the fares and service parameters and monitoring the performance of the franchisee. Like net cost contracts, franchises can involve payment in either direction between the authority and the operator depending on the strength of the public transport market and, given constraints on fares, how much unremunerative service the authority requires to be operated. Whilst taking fine control out of the hands of the authority, an exclusive franchise will encourage the operator to provide fares and service integration within the franchise domain.³

in the market may not necessarily be the best answer. Singapore could quite easily adopt the franchise system used for Hong Kong's mainline buses, which is very similar to Singapore's bus arrangement, although the former has competitive tendering. In both places, operators largely determine their own routes and schedules in accordance with broad guidelines. Such a change would probably offer efficiency gains through competition, while it might also offer the opportunity to increase service standards substantially at tendering times. Unfortunately, a shift to competitively tendered franchises would do little to improve integration. Franchises would probably maintain separate public identities, information services, and marketing approaches, and would have little incentive to cooperate with each other. Hong Kong's level of integration is certainly not poor, but as a public transport "paradise", it does not need to strive in this area, as Singapore probably does.

In Singapore, the Government could consider "service contracts" and, in particular, "gross-cost" service contracts. This alternative approach to competition is most compatible with both a high degree of system integration and a more ambitious, customer-oriented planning mechanism. Service contracts have been widely applied but it is in Scandinavia that the combination of competitive tendering, excellent integration, and ambitious targets

for system improvements has been most notable.⁴ This approach involves assigning a single public agency with responsibility to integrate the planning of routes, timetables and pricing, in accordance with a unified vision for the public transport system. Private operators compete via periodic tendering for the right to operate routes specified by the agency. In addition, the gross cost approach involves the central pooling of fare revenues and payment to operators on the basis of performance and services delivered.

This model requires a more "hands-on" approach to public-sector planning and monitoring which would mark a significant change from Singapore's relatively hands-off regime at present. Service contracts may not work in countries that lack the necessary institutional capacity. Singapore, however, could clearly muster the administrative capacity to succeed and benefit from the improved policy options that this approach allows.


Singapore may be too concerned about the size of its public transport market to attempt competitive tendering. However, because public transport plays such a significant role in Singapore, the market is far from tiny, with total demand comparable to that of the whole of Australia. Nevertheless, the need for sufficiently competitive tendering may eventually prompt a gradual opening up of the local public transport market to

international players. Fortunately, there are many precedents to learn from. While opening up the local public transport market may cause concern, it is in line with Singapore’s desire to encourage local operating companies to venture into international public transport markets — a process well underway.

CONCLUSION

Singapore needs a more ambitious, customer-focused vision for public transport that will appeal to everyone, including affluent people with choices, and that will become a central component of a high-quality “car-free” lifestyle.

No regulatory system is a panacea since all have their strengths and weaknesses. This article has suggested a model well-suited to Singapore’s current imperatives and strengths. It demands a more intensive role for the public sector in planning public transport but with continued private-sector operation and the introduction of real competition via competitively tendered gross-cost service contracts.

Such a model should help Singapore to reap efficiency benefits from competition, while also enabling an accelerated effort towards a much more ambitious and highly-integrated public transport system. 

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NOTES

1. Pucher, J., H. Park, M. H. Kim, and J. Song. “Public Transport Reforms in Seoul: Innovations Motivated by Funding Crisis.” *Journal of Public Transportation* Vol. 8, No. 5 (2005).
2. Mees, P., “The “Zurich” Model: Planning and Integration as an Alternative to the Market.” in *A Very Public Solution: Transport in the Dispersed City*. (Melbourne: Melbourne University Press, 2000), 120-151.
3. Halcrow Fox. *Department for International Development, Review of Urban Public Transport Competition, Draft Final Report*. (London, UK: Halcrow Group Limited, 2000), 3.
4. Hidson, M. and M. Müller. *Better Public Transport for Europe through Competitive Tendering — A Good Practice Guide*. (Freiburg, Germany: ICLEI — Local Governments for Sustainability, 2003).



Tan Li San

Quality of Life in Singapore

Can Singapore become one of the world's
most liveable cities in the 21st century?

While having a picnic lunch at the reservoir park, your spouse spots a kayak booth and thinks it would be a novel idea to tour the reservoir on boat. After a leisurely paddle and a stop for ice-cream, it is time to head home. Your in-laws drop in for a visit, bringing presents and sharing how they hopped from one mall to another along the shopping belt, never having to leave the air-conditioned comfort of the newly opened underground linkways lined with interesting shops and cafés.

Could this be Singapore in the near future? While Quality of Life tends to be associated with fashionable cities such as Sydney and Vancouver, mention Singapore and the first impression tends to be: *too hot and humid; too few entertainment options; too urban and built up*. Singapore has even been caricatured as a sterile “police state” where censorship is rife and individual views suppressed.

It may come as a surprise to many that Singapore is ranked first among Asian cities in Mercer’s 2006 Worldwide Overall Quality

of Living Survey. The Economist Intelligence Unit's (EIU) Worldwide Quality-of-Life Index, 2005 accords Singapore 11th place in a list of 111 countries. The Country Brand Index has also ranked Singapore second-best city in the world for dining and night-life!

Having said this, Quality of Life is no guarantee of economic growth or success. Still important are our national fundamentals: our safe and politically-stable environment; good connectivity within and out of Singapore; and quality educational opportunities for our young. Furthermore, the primary draw that retains Singaporeans and attracts foreign talent is and will continue to be the availability of vibrant and diverse economic opportunities.

But when Singapore is in competition for global talent (international as well as our very own), what could make all the difference is a compelling Quality of Life. Singapore should be an interesting place where the talented can participate in intellectual discourse, let their hair down, and fulfill their aspirations. By enhancing our Quality of Life, we hope to create a Singapore that all Singaporeans can be proud of; at the same time, we want to offer differentiating factors that may attract those who are seeking a new investment location for their businesses or a conducive place to raise their families.

SURPRISING SINGAPORE

In recent years, investments and developments have been undertaken to further enhance Singapore's attractiveness as a city in which to live, work and play. To this end, arts and entertainment options have increased. The Esplanade showcases esoteric international fare and pop culture performances, while nightlife hotspots, such as the Ministry of Sound in Clarke Quay, Café del Mar on Sentosa, and the newly transformed St. James Power Station, have the potential to rival those in Europe. More recreation options are now available, from wakeboarding at beaches to rock climbing in disused quarries.

Those who pine for green spaces might be surprised to learn that there are some 300 parks and gardens in Singapore, 70 kilometres of park connectors that link up various parts of the island, with another 130 kilometres planned by 2012. Rich ecosystems of biodiversity exist in our secondary rainforests, mangrove forests, and coral reefs, many of which are accessible to the public. The recent vision to make Singapore a "city of gardens and water", with high-rise gardens and lush, landscaped waterways, can only reinforce our green image.

Quality of Life for some is about freedom of expression and avenues for fulfilling their dreams. In this respect, Singapore has liberalised over the years. Our censorship approach has become more

liberal in terms of content standards for mature persons. For example, the film classification system has been refined. The content of arts entertainment need no longer be vetted. There is also greater tolerance for diversity of views and public debate. Our education system is gradually evolving towards one that encourages multiple pathways to success.

WHERE WE CAN GO FROM HERE

While developments have been promising, there are opportunities for Singapore to do even more in the area of Quality of Life.

Hardware: Capitalising on our Tropical Attributes

While heat and humidity have often been touted as inconveniences, Singapore has done much to mitigate these effects with pervasive air-conditioning. Plans are underway to pursue greater integration in our development of townships and urban areas, with covered linkways and bridges between transport nodes to ensure that pedestrians are sheltered, come rain or shine. Just as underground cities have flourished in Montreal and Osaka in response to the cold, underground malls in Singapore would also offer a choice to visitors — enjoy the tropical sunshine or a cool climate-controlled environment. Singapore can also do much more in terms of turning our tropical attributes into our strengths. For instance, heat-trapping glass

houses have no place in the tropics; we can do more instead to promote tropical design and architecture. We can also encourage vertical greening to soften our urban skyline landscape and high-density living environment.

Software: User-Centric Development

There is room to adopt a more user-centric perspective in urban planning. Functionalities and features should be led by the needs and desires of users and the community, not only by what is most expedient. We have been doing this more consistently: for example, universal design features are now incorporated in our public housing projects to cater for the elderly and disabled. But the answer to improving identity and culture, according to architect Tay Kheng Soon, does not entail a “design solution” but rather “empowerment”. In a 1998 interview, he argued that the challenge lies in “how to encourage and how to allow people to take power to run their own lives. Because if they have no power to run their own lives and to run their own communities, they have no power to imagine any possible future except the one prescribed to them.”¹ Greater community ownership and the development of common spaces would be desirable outcomes.


Heartware: More Voices, More Choices

The intangibles matter as well. We need to

move away from prescriptive rules toward risk management: instead of taking an ex-ante view that people need to be “protected” from themselves, we need to balance safety concerns against opportunities in order to cultivate buzz. Where possible, a negative-list approach to rules and permits should be adopted: for example, instead of stipulating what mobile hawkers can sell, we could specify a minimal list of what they cannot sell. Where people have turned public spaces into spontaneous hives of activity (such as the use of unused urban spaces as skate parks), officialdom should refrain from discouraging such impulses, particularly when they are not creating public nuisances or impinging on the rights of others. There should be greater room for spontaneous and organic development. To address any misperceptions about “restraints” in Singapore, we also need to become savvier in marketing and public communication, and in engaging the international media.

CONCLUSION

As with other public policy objectives, the pursuit of Quality of Life must be balanced with other imperatives, including economic ones. To ensure that our strategies for enhancing our Quality of Life do not inadvertently impinge upon other important goals (and vice versa), we may

do well to adopt a “triple bottom line” approach, which demands that we take a holistic view of economic, social and environmental considerations in evaluating our projects and making decisions on major developments. 

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NOTE

1. Bay, P. “Tay Kheng Soon and SPURS: Activism in the early days of Singapore’s history,” (interview conducted in October 1998), <http://www.newsintercom.org/index.php?itemid=57> (accessed 7 March 2007).

 Opinion

Aaron Maniam

Spaces and Scapes — Thoughts on Urban Planning

Whenever I hear the phrase “urban planning”, three experiences come to mind. The first involves staying in Seoul’s “The Shilla”, which many think of as the Korean equivalent of our Raffles Hotel. Located far enough from downtown Seoul’s urban bustle to be beyond the raucous sounds of Insa-dong market, the hotel overlooks the lush greenery of Namsan Park. My reaction may have, in part, been due to seeing with a newcomer’s eyes, but I found the park a treasure trove of interesting corners — an archery range in one spot, a pétanque space in another, and a basketball court in yet another.

I also think of my time as an undergraduate in Oxford. The university town is rightly famous for its college architecture — from the imperious edifices of Balliol and Christ Church to the more modest Victorian façades of Lady Margaret Hall and Somerville. Equally memorable, though less awe-inspiring, were the many crannies unearthed by the familiarity of three years, often nestled between larger buildings: a moss-covered cemetery here, a centuries-old pub elsewhere, or a field

untouched by human presence for months, dandelions standing like sentinels to potential intruders.

The phrase “urban planning” also evokes memories of visiting friends in Boston. Each time, some gravitational force seemed to pull us towards the string of cafés surrounding Harvard Square, where we would sit and sip hot beverages, savouring each moment of school vacation (or latterly, leave from work) and watching the world go by.

I have often wondered why the phrase prompts such recollections. After all, most traditional understandings of the concept of urban planning paint it as clinical and scientific, bringing order and structure to situations which could, otherwise, lapse into risky randomness or the damaging effects of urban sprawl. My memories seem focused on micro-spaces rather than the larger forces that have shaped cities in the past — the walls and moats of feudal towns, for instance, being a response to security needs; town squares a result of the need for a space dedicated to commerce; industrially-replicated buildings born from a need to house large volumes of

manufactured goods; and the lack of crowded buildings in the Pacific “ring of fire” a response to the potential risks of earthquakes and geomorphology.

Upon further reflection however, I think a genuine case can be made for including the study of “small spaces” in urban planning. In one of the poems in my collection *Morning at Memory’s Border*,¹ the city-scapes captured in the photographs of Alfred Stieglitz remind me of how:

“... as cities bud, build and bloom
Higher, the more need we find for niches,
Corner comforts and the solace of small
spaces.”

Studying this human “need... for niches” in urban settings actually formed a large part of the work of William Whyte, an eclectic intellectual who was, at different times, a planning consultant for major US cities, adviser to Laurence Rockefeller on environmental issues, a Distinguished Professor at Hunter College of the City University of New York and a trustee of the American Conservation Association.

Small spaces humanise our cities,
bringing life and dynamism to
urban landscapes.

The three memories I described above correspond quite neatly with some of the

key ways that small spaces serve to humanise our cities, bringing life and dynamism to urban landscapes.

The Shilla and its contiguous parkland highlight the important aesthetic function that small spaces can play. Some urban planners see this function as being principally “anti-urban sprawl”, but there is also an important positive role. Small spaces beautify and provide alternative lines to buildings.

The originators of Singapore’s aspiration to be a “garden city” are likely to have had a similar objective in mind. Their experience belies the instinctive assumption that aesthetic considerations will take care of themselves through some spontaneous process of rationalisation. Rather, while the final output should appear creative and spontaneous, the process can be every bit as precise and orchestrated as other branches of urban planning. This applies not just in Singapore, where land scarcity requires the deliberate designation of areas for their aesthetic function. In the example of The Shilla, planning is evident in how the park’s spaces dovetail with the hill that forms its core; while famously “aesthetic” cities like Rome and Paris demonstrate a conscious earmarking of certain areas as sacrosanct and separate from the more obvious functionality of others.


Oxford is a prime example of how small spaces allow cities to accommodate a process that I have come to think of as “**historical sedimentation**” — the gradual layering of different parts of a city’s past with aspects of its present and future. I remember similar principles being illustrated (consciously or otherwise) in the Syrian city of Aleppo, where ancient gardens and the city’s central citadel are surrounded by modern restaurants and shops. In a nascent way, I think we see this in Singapore as well — even a short walk from Little India to Chinatown unearths such gems as the Jamae Chulia Mosque and the Sri Mariamman Temple. Where viable, recognition of such spaces’ historical and cultural significance helps to provide a



temporal counterpoint to modern or modernising architectural designs, by providing sanctified areas where the vicissitudes of time and tide are kept at bay.

The Boston cafés highlight a much more widespread phenomenon that two human geographers from Glasgow University, Eric Laurier and Chris Philo, describe as the rise of a “**cappuccino culture**”, where cafés provide the means for increasingly fragmented human societies to “come together again”. This may not seem like a particularly groundbreaking observation, until we remember that the advent of efficiency-enhancing technology can often be a cause of reduced social interaction, alienation and isolation. Small spaces in our cities cannot be a panacea to this phenomenon — which Harvard political scientist Robert Putnam described as “bowling alone” — but they can provide a counter to its growing pervasiveness.

Of course, the practical limits and physical constraints involved in urban planning mean that small spaces cannot be an over-riding consideration in landuse. They are an important part of a city’s life, however, and should be recognised for the texture, nuance and variegation they bring. It is probably not for nothing that in one of his most seminal books, *The Social Life of Small Urban Spaces*,² William Whyte said:

“I end then in praise of small spaces. The multiplier effect is tremendous. It is not just the number of people using them, but the larger number who pass by and enjoy them vicariously, or the even larger number who feel better about the city centre for knowledge of them. For a city, such places are priceless, whatever the cost. They are built of a set of basics and they are right in front of our noses. If we will look.” 

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NOTES

1. Maniam, A. *Morning at Memory's Border: Poems by Aaron Maniam*. Singapore: firstfruits publications, 2005.
2. Whyte, W. H. *The Social Life of Small Urban Spaces*. Washington, D.C.: The Conservation Foundation, 1980.

 Opinion

Simon Tay

The City and My Home

A CONTRAST OF PLACE AND PLANS

This evening I thought of the New Year countdown and fireworks at the Bay while walking with my son and his dog around Seletar air base, where we live. The disparity is stark and tells me how the city is changing and affecting our lives.

The Bay and Countdown are new creations that aspire to be national icons: a place and an annual event that can gather attention from thousands of those who live in this city. They are potentially svelte emblems for the new exciting global city that is planned and emerging in Singapore.

There is, however, a contrast between public and private spaces in Singapore. When Singaporeans think of our country, collectively we may see the image of our skyline, the Padang, Orchard Road on a busy afternoon and, perhaps in time, the new Bay.

Yet, when Singaporeans individually think of home, it is a much more particular and varied space, dependent on individual and differentiated memory. To some, it

could be a luxurious bungalow or condo in the prime districts. To others, it is an HDB apartment and neighbourhood they grew up in. In my case, this individual picture of home is Seletar Air Base, where we have lived for a decade.

LIMITS TO PLANNING AND THE VALUE OF THE UNPLANNED

Seletar Air Base has for many years been a place that has prospered from neglect, from being on the fringe of things. It is an unplanned space, spontaneous, accidental; it evolved from an English and military enclave to become quite a cosmopolitan bohemia with a mix of peoples in Singaporeans and many different nationalities, diverse in ethnicities and outlooks. It is a green and gentle place that calmly defies the norms of Singapore as a fast-paced and compact city.

Why should we value such unplanned places? Planning must be thorough, rational and holistic enough to take into account social and environmental costs. Even so, Humanity's power is so magnified

by machines and technologies that we must be cautious of the unintended and unforeseen consequences of plans. Understanding the complexities of nature and of change, we must try to account for the things we cannot plan for, even if there is less than full evidence that they are likely to happen. Environmentalists call this the precautionary principle.

The sociologist, James Scott, in his book, *Seeing Like A State*, reminds us many follies can otherwise follow. In lesser hands and minds, planning led to long queues and shortages and the eventual collapse of the Soviet system.

Planning is fundamentally built on projections of the present, made into the future. The planning of the domestic industries, of jobs, and for public housing in Singapore have – implicitly or explicitly – made these calculations. All may have seemed logical and rational at the time, given what we knew then. But there are many surprises and revolutions in our expectations. Planning cannot account for that. The unplanned is a hedge, an insurance policy in times of revolutionary change.

The unplanned also has its value. All societies have a mainstream that is supported by government plans. But this is not natural and permanent but created and subject to change. The relations between periphery and centre are many and complex. Within a society, habits from a minority can come into the mainstream

like fashions and dance forms, from tango to disco. What we consider as *peripheral* influences and helps shape evolution in the mainstream. The unplanned, the spaces between, are a necessary balance, not in terms of a static and fixed balance, but in a moving and changing balance, like the Yin and Yang.

The peripheral influences and helps shape evolution in the mainstream.

We should allow diversity in our landscape and society. The unplanned provides surprise, texture and serendipity. This can be physical: in a modern city, a conserved building; or in the heart of an old city, a gleaming tower. It can be mental and social: in a busy business day, an hour for coffee with a person with an interesting story or even the prospect of falling in love, like the famous photograph by Robert Doisneau, where amidst the milling, bustling crowd, a couple kisses. Planned schedules are disrupted, put on hold, for something – romance – that no one can really plan for, even if we can hope for it.

We can draw cities on a clean slate, on a blank page: we can plan a city of 6.5 million, with Integrated Resorts and expensive, shiny apartments downtown. But the sense of home and of belonging grows best from the chemistry of old and

new, past and future. Planning is best when it allows for the organic and unplanned, what pre-exists, and takes the best of those qualities to inform what is new.

LOVING THE CITY

Planning can make or unmake images and memories of home. It has now come to my home at Seletar. But planning will not create and reinforce the special qualities of this place. Instead, the plan to grow an aviation hub will, in the process, destroy much of the green and quiet spaces and old black and white houses, dispersing the community that thrives here. My home will go. This story is not mine alone.

There are many others who live here who can tell of markers of their memories — houses, schools, favourite restaurants, neighbourhoods — that have been removed. There are those involved in en bloc sales, in which homes are sold collectively even if a minority of owners may vote against it. There are selective en bloc redevelopments too.

In the macro calculations of mega projects and national interest, these trade-offs of course make sense. What is the loss of one person's home? When we see as a state sees, the interests of individuals are merely digits. But the lens of memory is individual.

I once wrote in a poem about Singapore that, *“if you cannot learn to love / (yes love) this city / you have no other.”*¹


In a society that puts rational calculation first, the idea of loving Singapore is emotive and radical. So often we hear of people rationalising the cost of buying homes abroad, the quality of education here versus there, the opportunities to get ahead — and make a decision based on bottom lines.

In contrast, the idea of having “no other” is to recognise that these cannot be real options, and calls for dedication to this country, this city and the places we know. Yet, it can also be a desperate call if the city no longer resembles the one you have known and grown to love.



We are trying to create national identity and national spaces. We can belong to the nation for one or two days a year. On such days, we will recite the national pledge with our hand over our heart. But on many

other days, each of us belongs to other more personal places, to home in this smaller more immediate sense.

We cannot achieve a national or collective sense of home at the expense of personal identities and spaces that create that individual sense of home. That individual sense of home is the everyday anchor to the collective. The state and the individual both must have their respective and interlinking places in Singapore. 

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NOTE

1. Tay, Simon, "Singapore Night Song," "5" (Singapore: Dept of English Language and Literature, National University of Singapore, 1985), pp137. Re-published in "No Other City: The Ethos Anthology of Urban Poetry," Eds., Lee, Aaron and Pang, Alvin (Ethos: Singapore, 2000).



Andrew Tan

Positioning Singapore in a New Asia

With the resurgence of Asian economies led by India and China, Singapore's economic prospects have never been better.

A TALE OF TWO CITIES — BEIJING AND MUMBAI

Beijing is a city in a hurry. With the 2008 Beijing Olympics around the corner, construction of a new national stadium that resembles a giant “bird’s nest” is well underway. On another site, workers are busy installing panels to the “water cube”, the new aquatics centre that looks more like a space-age museum than a swimming pool. Meanwhile, a third airport terminal with a 3,800 metre-long runway will soon

accommodate the new Airbus 380s. As part of the city’s extreme makeover, Vice Mayor Lu Hao, has promised to tackle other challenges facing the city: clearing the city of its pollutive industries, investing in new public infrastructure, creating more jobs, improving social security and raising public health standards. In short, Beijing — symbolising the new face of China — aspires to join the ranks of other major international cities.

In Mumbai, a different buzz fills the

air. Cars, buses and people jostle for space as they wind their way through the noon day traffic. Businessmen in their ubiquitous Ambassador cars close deals on their handphones in the sweltering heat. Better known for its Bollywood stars, Mumbai is the financial capital of India: the stock exchange is the primary exchange of the country and most large businesses have their corporate offices in this city. Mumbai, too, has plans to transform itself. It does not have the deep pockets of the Beijing Municipal Government, but that has not deterred Dr D. K. Sankaran, the Chief Secretary of Maharashtra, from having big dreams for the city. Mumbai international airport is being modernised. Mumbai will also be linked to the Golden Quadrilateral — over 5,000 kilometres of four- and six-lane expressways connecting Mumbai, Delhi, Kolkata and Chennai. Mumbai has come to symbolise the city of golden dreams where everyone hopes to be rich.

ASIA'S NEWFOUND PRAGMATISM

Mumbai and Beijing may be very different, but they are the future of Asia. China has been posting staggering growth rates of 9% to 10%, while India's growth has been no less spectacular at 7% to 8%. Japan, too, is staging a comeback after more than a decade of malaise. The simultaneous renaissance of these three powers is unprecedented. Barring unforeseen circumstances, Asia will be the most dynamic region in the world. As millions

join the ranks of the middle class across China and India — the numbers of billionaires in China, Hong Kong and India have already overtaken Japan's — the region will experience a new wave of growth.

Underpinning much of this growth is a new mood of economic pragmatism. In India, Nehruvian socialism has given way to what Gucharan Das calls the quiet triumph of "democratic capitalism". A billboard at the recent World Economic Forum meeting in Davos read: "15 Years, 6 Governments, 5 Prime Ministers, ONE DIRECTION". Even China's communism has taken on a new face. China's communist party has been quick to induct entrepreneurs and business leaders into its ranks. Party apparatchiks have given way to MBAs on the factory floor.

Of course, it would be over-simplistic to compare China and India in one broad sweep, although such comparisons are inevitable. China has a headstart over India, having invested billions of dollars to improve its infrastructure over the last decade; India has much to catch up on, but the spirit of Indian enterprise is alive and well. Cash-rich Indian companies have also been making overseas acquisitions in Europe and the US. China's predominantly state-driven enterprise stands in stark contrast to India's private sector-driven approach. Both countries are still grappling with extreme poverty. Growth remains unbalanced across sectors and between regions. Income disparities are widening.

Although these two giants are taking unequal steps forward, they are marching to the same tune.

SINGAPORE'S PROSPECTS AND CHALLENGES

Singapore's prospects have never been better. Growing interest in Asia has led to a flow of new investments, particularly into China and India, from Europe, the United States, and the Middle East. In turn, Chinese and Indian companies seeking to expand their presence overseas are looking to the region. The long-term outlook for the region remains favourable, notwithstanding short-term fluctuations. How can Singapore position itself to partake in Asia's growth? I believe we can pursue three key thrusts.

Redefining Geography as Destiny — Expanding Singapore's Regional Reach

First, we should increase our stakes in Asia's growth. Several trends work in our favour, namely increasing connectivity, the harmonisation of standards, and the growing ties between Asia and the rest of the world.

To elaborate: direct air links within the region are growing and new roads and railways are being constructed. In a matter of time, the whole of mainland Southeast Asia, China and India will be connected in some way or the other. Singapore should

ensure it remains well-connected with the region.

Next, with regional economies seeking to integrate with the global economy, we can expect these countries to move towards more rule-based systems, greater rule of law and the adoption of international standards. Leveraging on our own experience, Singapore can help these countries to plug into the global economy.

Several trends work in our favour, namely increasing connectivity, the harmonisation of standards, and the growing ties between Asia and the rest of the world.

Likewise, the growing interest of the Middle East, Russia, Europe and Latin America to engage with China, India, Japan and Southeast Asia allows us to pursue new tie-ups and partnerships in the areas of trade, commerce, arts and culture. As their partners, we are unlikely to pose a threat as a challenger. This is the advantage of being small.

Attracting the Next Wave of Chinese and Indian Multinational Corporations (MNCs) — Harnessing Singapore's Brand Name

Although some have questioned the continued relevance of Singapore's MNC-led growth, I believe this model remains relevant. Following the earlier waves of European, Japanese and American MNCs

to Singapore, we should now attract the so-called coming “fourth wave” of Chinese and Indian companies seeking to become the next MNCs. Taking advantage of this trend requires us to better understand the business needs of Indian and Chinese companies as they expand overseas.

Bilcare is a good example of how an Indian pharmaceutical packaging company sees value in setting up its operations in Singapore. It has invested US\$25 million in a new plant in Singapore with the latest polymer barrier film technology for pharma packaging. This plant is 10 years more advanced than what the company has in Pune, India, and uses much less space and manpower. Singapore will act as its main logistic and distribution base for global distribution. For example, it takes seven days for Bilcare to ship its product to the US from India, while it only takes two from Singapore. Bilcare also hopes to undertake clinical trials for drug companies, thus providing total solutions to the pharma industry, encompassing the manufacturing, packaging, storage, distribution, and disposal of clinical supplies for clinical trials.

Chinese food manufacturer, Royal Meiweizhen, has invested US\$10 million to set up a holding company in Singapore. Through Singapore, it hopes to formalise its franchise structure and market worldwide. It is bringing under its umbrella three companies: Beijing Royal Food Industrial, Beijing Royal Science and Technology, and North Green Royal Food

Technology. It has several proprietary food preparation technologies which it intends to patent in Singapore.

Bilcare and Meiweizhen are just two examples of aspiring global companies who see advantage in leveraging Singapore’s trust, reliability and connectivity. Their investment amounts may be small compared to the more established Western MNCs. However, if we can attract them to Singapore and help them grow their global operations, both sides will stand to benefit in the long-term. Our local small and medium enterprises (SMEs) will also stand to benefit from a more vibrant business landscape.

Building National Globally Competitive Companies? We still need our Temasek-Linked Companies (TLCs)!

In our renewed efforts to attract MNCs, we should, of course, not neglect our own businesses and SMEs. We should continue to groom them. However, these efforts will take time to bear fruit. Our lack of critical mass and small domestic market constrain our ability to develop our own Bilcares and Meiweizhens in the short to medium term.

Meanwhile, TLCs such as DBS Bank, SembCorp Industries, SingTel, CapitaLand and PSA International, have grown stronger and could develop into multinationals. Few, if any, of our SMEs will have similar resources to undertake large-scale projects or stay the course in many of the newly emerging markets. Fewer still can muster the talent.

Any decision to divest these companies at this stage should be considered carefully. Once divested, their main priority will be to maximise shareholder value, rather than building up Singapore's brand name and overall capabilities.

ANTICIPATING CHANGE:

NO SILVER BULLET


As policymakers, we sometimes overestimate our ability to influence events, but the problem is that we cannot predict the future in today's more complex environment. The best way forward is to seize opportunities and adapt as we go along. This will require an experimental mindset and a greater appetite for risk, but in our quest for "Blue Ocean" strategies, we should not neglect existing strategies and markets. We may need to redefine what we are currently doing. After all, Starbucks reinvented the cup of "kopi-o". Who would have imagined that Starbucks would be as ubiquitous as our "kopi-tiams" in our HDB heartlands?

IMPLICATIONS FOR THE PUBLIC SECTOR

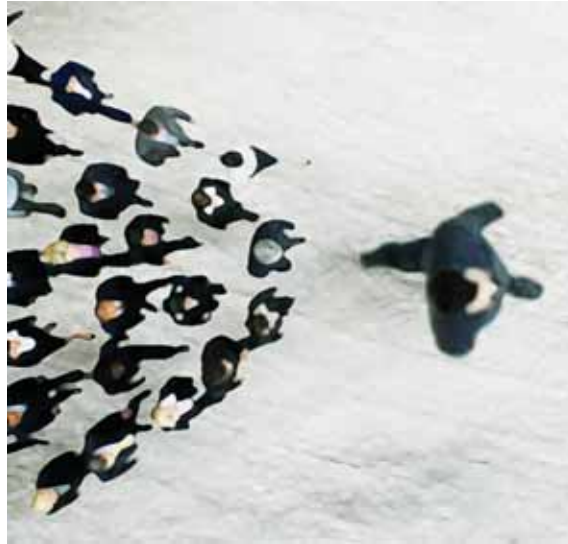
Asia's resurgence will bring forth new challenges for the public sector. For the Government, the most pressing issue today is how we organise ourselves to thrive in this increasingly competitive environment and seize new opportunities more systematically. With the proliferation of government departments, statutory agencies and even inter-agency committees,

there is a danger that each of these pursues its own interests, and sub-optimises the national well-being.

However, it will not be realistic to undertake a massive restructuring of Government. Better we forge a clearer consensus of our national priorities and implement mechanisms to promote closer collaboration among our agencies. The establishment of the Singapore Cooperation Enterprise (SCE) to look into the export of public sector and governance expertise is a good start, but much more needs to be done to promote inter-agency coordination. The way we assess and reward our people must reflect these priorities.

In this regard, the Public Service should seek to promote a common understanding of the challenges confronting Singapore while identifying new opportunities for Singapore. The process should be just as important as the outcome. Rather than tinker at the edges, it should call for bold changes. Executed well, this effort should harness the collective energies of the public sector in repositioning Singapore in the New Asia. 

Andrew Tan is Deputy Secretary (International) in the Ministry of Foreign Affairs. This article was written following study trips to India and China, under the Institute of Policy Development's 6th Leaders in Administration Programme (9 October to 17 November 2006). The views reflected herein are his own.



Ng Chee Khern
**Strategic in Outlook, Nimble in Execution:
Strengthening the Centre in Government**

To stay strategic in outlook and nimble in execution, the Singapore Armed Forces restructured its chain of command. Should the rest of the public sector follow suit?

BARRIERS TO A NIMBLE GOVERNMENT

The Singapore Government has been highly effective in conceptualising and implementing strategic ideas – a strength that has played a major role in Singapore’s success. Concerns have been raised, however, that our edge for swift, decisive action may be at risk of erosion as the public sector becomes structurally more complex. In particular, there appears to be three structural bottlenecks in our current policy formulation and implementation process. These suggest that a thorough

review of Civil Service planning and strategy formulation processes may be necessary to preserve our competitive edge as a forward-looking, nimble Government.

First, the Civil Service needs to identify new economic opportunities as they arise and be quick to exploit them. This is especially vital since Singapore is essentially a price-taker in the international economic and technological spheres. However, some senior leaders in Government have cautioned that as our bureaucracy has thickened, we may not be as bold and

entrepreneurial as we used to be in identifying and following through with new ideas. This inertia in Government could be the result of policymakers considering issues only from the limited perspective of individual Ministries, or it could be the consequence of endless consultations, negotiations and compromises across too many agencies before action can be taken, by which time the impetus would have been lost.

Another recurring dilemma is that many national objectives have to be traded off against one another. For instance, economic policies need to be balanced against social goals (e.g., deeper integration with the global economy at the expense of a higher level of structural unemployment) or security concerns (e.g., loosening of visa requirements for certain nationals). At present, such trade-offs can only be arbitrated by the Prime Minister and his Cabinet since staff at the lower levels of Government do not currently have the mandate to make the necessary judgement calls between conflicting priorities.

This leads to a third problem: trade-offs are better managed if there is sufficient lead time, which is only possible in the developmental arena. In other words, the capacity to make optimal trade-offs is more likely to fail when events are already unfolding by the hour, such as during the SARS crisis, or in the way public

communications or information operations were handled during the International Monetary Fund/World Bank meeting. The capacity to make effective trade-offs is further hindered by the proliferation of statutory boards – each with its own priorities and timelines.

The capacity to make effective trade-offs is hindered by the proliferation of agencies – each with its own priorities and timelines.

A review of governmental structures and processes should address these three bottlenecks. To rediscover our strategic effectiveness, we will need to look at issues holistically beyond the concerns of individual Ministries; we must also have the capacity to implement developmental policies and execute operations nimbly across the whole of Government.

Some existing initiatives and structures go some way towards addressing these issues. For example, the Strategy Policy Office (SPO) anticipates changes on the horizon and supports the Government in articulating a vision of Singapore's possible and desired futures. The Ministry of Finance (MOF) arbitrates trade-offs between various Ministries through the budget allocation process. The Public Service Division (PSD)

influences postings of Administrative Officers and Management Associates, and therefore affects distribution of talent in the public sector to some extent. The National Security Coordination Secretariat and the National Research Foundation are two bodies that have also strengthened the decisive “centre” of the Civil Service. Despite these efforts, the three structural barriers to nimble strategic action persist.

SAF AS ROLE MODEL FOR ORGANISATIONAL NIMBLENESS

How might the Civil Service overcome its structural bottlenecks? The Singapore Armed Forces (SAF), which has transformed its organisational structure over the past two and a half years, may provide useful lessons.

The main premise of the SAF reorganisation effort is that a strong centre is critical in ensuring that we take a visionary approach to issues; make the best trade-offs in achieving our strategic priorities; and make decisions effectively and swiftly on operational matters.

From 1982 to 2004, the role of the Joint Staff designation in the SAF was to coordinate between the three SAF Services (Army, Navy and Air Force) in their respective development and operations. Prior to the SAF’s organisational review, planning and operations were decentralised to facilitate the rapid build-up of basic capacity in each of the three

Services. In a large and complex organisation, locally optimal solutions were the quickest way to build baseline capabilities, but decentralisation also led to paralysis, because decisions in the interest of one agency may be at the expense of the larger organisation.

In its transformed role, Joint Staff now actively directs the Services in both development and operations. Optimisation in planning and execution can now be achieved at the level of the entire SAF rather than at the level of individual Services. By adopting a more integrated approach, the SAF is better able to make trade-offs with a holistic view of strategic priorities for the entire organisation.

The success of the strengthened role for Joint Staff was demonstrated in recent operations. For example, in the relief operations in Aceh in Indonesia, there was only one chain of command from the troops via the Head of Joint Ops, Director of Joint Ops and Planning Directorate to the Chief Defence Force for day-to-day operations, and further to the Minister overseeing strategic decisions. All assets – whether from the Army, Navy or Air Force – came under a single chain of command. All issues were handled through this single chain of command without having to be cleared through respective commanders in the Army, Air Force and Navy, as was previously done.

Development in the SAF has also

benefited from the strengthened role of the Joint Staff office. Previously, the three SAF Services would come up with their own operational requirements and development plans with only very broad central guidelines. The role of Joint Staff was mainly a “residual” one – to resolve conflicts between the needs of the three Services – rather than to ensure integration and extract synergies across the SAF. The final budget needed to build up the SAF, for instance, was a simple summation of the requirements from the individual Services, rather than one based on overall strategic priorities for the entire SAF. Under this system, strategic capabilities that cut across the three Services were less likely to be built, because these Service-wide initiatives did not have a clear owner. The risk of over-building, especially of peripheral capabilities, was also greater.

In contrast, today’s strengthened Joint Staff has the mandate to originate and prioritise the strategic requirements of the Services through a series of medium- and long-term plans. The Joint Staff also actively participates in the Services’ Operational Masterplanning, ensuring that these requirements are transformed into actual projects and capabilities.

LESSONS FOR THE CIVIL SERVICE: HEAD, CIVIL SERVICE AS CHIEF-OF-STAFF, JOINT STAFF?

The experience of the SAF suggests that in

order to make the Civil Service more strategic and nimble in an era where issues increasingly cut across agency jurisdictions, it is clear that its centre needs to be strengthened.

Under our present system, issues can only be centrally directed to a limited degree, for instance, through MOF when a project comes up for reinvestment funding. This arrangement is reactive, rather than one where a central authority can proactively direct the system towards strategic ends. Our situation is akin to the legal process, where a case has to be put before the authorities before a guiding precedent can be established.


Singapore’s Civil Service could benefit from a strong central directorate, with Head, Civil Service (HCS) playing a role analogous to the Chief-of-Staff, Joint Staff (COS-JS) in the SAF. The SAF Service Chiefs currently direct developmental policy for their respective Services. The COS-JS, however, has the mandate and executive capacity to direct the work of the three Services so that all issues are managed from a holistic, SAF-wide perspective. Applying this analogy to the Civil Service, the Permanent Secretaries would remain primarily responsible to their Ministers but there would be a greater degree of coordination and direction executed by HCS. Without this level of coordination, issues surfaced to the Cabinet would be largely filtered through the agency-centric

views of individual Ministries. To facilitate the required level of coordination, it would also be ideal if the Prime Minister's Office (PMO) (specifically, PSD and SPO) and MOF could come under the direct supervision of HCS.

Processes would have to be modified to allow HCS to discharge his increased responsibilities. HCS would only be able to exercise his mandate if he is able to utilise, mobilise, and emplace people of the appropriate calibre and experience, and deploy appropriate resources to make things happen. We may wish to consider strengthening SPO and the overall planning processes so as to allow HCS and his staff to prioritise the work of the Civil Service as a whole. To add teeth to this mandate, the authority of MOF to allocate funds should also come under HCS and his office. HCS should also be given greater powers in initiating and recommending manpower postings. The HCS position should, therefore, be a full-time appointment and his office would oversee both PMO and MOF.

The SAF experience suggests that wide-ranging reforms to organisational structure need to be adopted with sufficient ambition and scope to be truly effective – this may well be true for the Civil Service as well. It might be argued that by strengthening the centre, we run the risk of emasculating the individual Ministries. However, while the centre needs strengthening, this should

not be achieved at the expense of the Ministries' core competencies.

Individual Ministries will need to be as strong as ever in their functional competencies. Otherwise, they run the danger of not having sufficient specialist expertise to take strategic action. However, Ministries will have to be convinced of the value of giving up some of their decision-making prerogative in the interest of a stronger and more holistic perspective on strategic issues that cut across the whole of Government. If they can be persuaded, the Civil Service has the potential to take on a far more strategic orientation and become a lot quicker and more nimble in execution. 

Brigadier-General Ng Chee Khern is Chief of Air Force. A pilot by vocation, he previously served as Director, Joint Operations and Planning Directorate and Chief of Staff (Air Staff). This article was written while he was attending the Institute of Policy Development's 6th Leaders in Administration Programme (9 October to 17 November 2006).



Interview with Martin Wolf

The Globalisation Game

The award-winning financial journalist and author of *Why Globalization Works* discusses the role of government in a globalised world, and the impact of China's rapid growth.

In your book *Why Globalization Works*, you argue that the world needs more global markets. What do you think is the proper role of governments in pursuing economic integration on the one hand and, on the other, ameliorating the negative effects of economic liberalisation?

There are tremendous economic gains to be had from integration with the world economy. In the post-Second World War period, every successful economy has had, as part of its success, the exploitation of international economic opportunities. This has been dramatically true of the Asian success stories, including Singapore.

First, it is quite clear that the necessary condition for successful exploitation of these opportunities is a supportive government. Government support is required in a whole range of dimensions. Success clearly requires a sensible policy; it requires the provision of basic rule of law and property rights, security, infrastructure, education, as well as support for the productive and investment sectors. There is a whole range of things that governments have to do.

Second, the ability of governments to

do these things is very variable. One of the reasons is because many governments try to do more than possible and things become worse as a result.

Third, it really does depend very much on the opportunity a country has. In an export-led growth pattern which starts with labour-intensive manufacturers, the involvement of government does not need to be very extensive. Trade only has to be allowed to proceed and it will, to some extent, evolve naturally. When you start thinking about financial integration or the successful exploitation of mineral wealth, much more is demanded of government. Financial integration demands a high quality regulatory regime or the ability to import such a regime from abroad through foreign direct investment (FDI) in the sector. In the case of minerals, there are huge dangers of corruption, waste and so forth. So again, a very high quality of government is required.

Finally, it is obvious that globalisation creates great opportunities for some in society and not for others. Yet there is a

need to preserve a degree of social harmony. You want people to feel they are all potentially part of the economic project of society. That means that governments do have to think about the education and training of the young, so that they can participate. They have to find ways to compensate the losers in the system. That means raising taxes for that purpose, which becomes more difficult as tax revenue itself comes under competition. However, a well-run country can still raise enough money to do this if its policies are targeted.

The underlying point is that markets need governments and governments need markets. There is a very profound relationship between the two and the argument for globalisation is certainly not an argument against government. It is an argument for sensible and good government.

In the post-Cold War era, the US has been the most forceful advocate of trade liberalisation and the globalisation agenda. But now there is pressure in the US to become protectionist, with more inward-looking measures. How do you see the role of the US evolving over time as the chief advocate of globalisation?

In a very deep sense, modern globalisation was ultimately a US project that goes back to the years after the Second World War. It is a logical consequence, if not an intended one, of the post-war system. Throughout the 1960s and 1970s, they pushed the idea that developing countries

should liberalise and integrate into the world system. So eventually everybody did, including the Chinese, the Russians, and the Indians. In my view, this was incomparably the most successful foreign policy project of the US and, indeed, of any great power.

The argument for globalisation is not an argument against government. It is an argument for sensible and good government.

There are many, many American winners from globalisation. The United States continues to possess and is likely to continue to possess for quite some time the world's most innovative companies, the world's centres for innovation. For this reason, it attracts many of the brightest people from all over the world, and it has many of the world's most successful multinational companies, financial centres and businesses. All these winners have a huge interest in making globalisation work in the US, and they are very influential in politics.

Of course, there are also some losers. Those who used to work in relatively high-waged unionised basic industries, such as steel and auto-production, are relative

losers in the current situation. The trade unions mostly represent them. They are only about 7% to 8% of the labour force but they are very important for the Democratic Party.

The right way of thinking about what is happening in the US – which is also happening in the UK and most other Western countries – is to ask: are there aggregate gains? In the US case, there is no doubt that there are aggregate gains. The economy's growth is partly a reflection of the large gains from globalisation. I do not expect the role of the US corporate sector, university sector, innovation machine to disappear in my lifetime; I expect it to remain dominant in these areas.

So the US is a divided community. There are very big winners in the US, permanent winners. Of course there are also some losers. How will this play out? Up to now, the winners have consistently been more powerful than the losers. In all probability, that will remain the case.

One of the most important things that has happened in this respect is that as companies increasingly become multinational, their interest is no longer with their domestic workforces. They have a global workforce, that is how they think of themselves, so they are not going to go for protection against imports. Therefore there will tend to be friction. Globalisation divides societies. The tensions will exist but I think they will be managed.

What do you think are the implications of China's entry into the global world? Do you think it strengthens globalisation or undermines it?

By and large, China has been a responsible player at the globalisation game. It has liberalised its imports dramatically, more effectively than Japan ever did, in fact. This has been crucial to its growth, integration with the world system and global engagement in China's development. It liberalised access to FDI in China. So FDI in China is enormous, in relationship to gross domestic product (GDP), whereas in Japan and Korea, for instance, it remains very small.

So China has chosen to be much more open to the world economy than, say Japan or Korea. I sometimes joke that if you look at the statistics, China looks like a gigantic Hong Kong, since it is so open. It has a much larger trade now than Japan in gross terms, even though its GDP remains only half of Japan's. This is remarkable and the decisions to open China in this way were very bold and have established broad vested interest in China's success from corporate sectors globally. This is a source of great stability for the world.

Now, has China been fully sensitive to the recent emergence of these large current account surpluses and their associated dangers? I think this explosive increase in foreign currency reserves and surpluses happened quite suddenly, rather than as

a matter of policy. Up to now, the surpluses have been manageable. The problem is that they are already very big and may get much bigger. Challenging adjustments to this new problem will then have to be made in future. They are aware of it and I think they will try to resolve it over the next four to five years.

The world can accommodate China's rise economically – provided China remains open, its imports grow as fast as its exports and its policies are seen to be fair and reasonable. But since it is such a huge shift in global economic power, adjustments are not going to be perfectly smooth. On the whole, however, the Chinese have handled all these challenges pretty well.

How do you see this geo-political and economic relationship between US and China play out in the long term? How will it affect other regional players?

This is the biggest single question about the future of the world geo-politically. All you can say is, big shifts in relative power have always created problems – new relationships have to be formed and that is difficult.

Second, China and the US are very different civilisations and different countries in a deep sense. The US has a tremendous influence on contemporary China – culturally and in terms of economic thought, for instance. The reverse obviously is not true. The history of China

(over the last two to three thousand years) and its contemporary political system makes it very different from the US on questions like democracy, human rights and the way foreign policy should be conducted. The potential for friction as a result of these different attitudes and values is also very deep.

You can now see this emerging quite significantly in China's foreign relations: China and Sudan, China and Zimbabwe, China and Iran – these are all potential trouble spots. Add to these differences a natural power rivalry, and the fact that culturally the US and China have little sympathy for each other. The US really dislikes the way China is run. The way the US is run is clearly not the one the Chinese have chosen for themselves. So presumably they are rather doubtful about it. These differences are profound. Here is the largest rising power in the world and it is not anything even close to a democracy. This is another source of conflict.

Third, China is imposing economic changes upon the world and upon the US which are very difficult to cope with. So there is plenty of potential for trouble.

The upside is that the Chinese particularly, but the Americans too, as Bob Zoellick¹ pointed out very well in a speech about a year ago, have invested in a mutual economic relationship which has become so deep, and engaged the interests of so many important players on both sides, that

clearly both would suffer enormous damage if it broke down.

At this stage in China's history, challenging the US head-on is pointless. China will rise and naturally change the balance of power, so they do not need to push it. It is not as if this is a temporary window of opportunity. China has more to lose in the breakdown of relationships now than the US has. They are certainly not a military rival in any way. They need American technology; the reverse is not true. They need access to American markets. They have a poor relationship with Japan already and certainly don't want the US using Japan against them. So I think the basic Chinese solution to this problem is to lie low and to be cooperative as far as they can. In most issues, they are.

I think that given all the problems the US has in the world and given the mutual interest and also Chinese policy, this will probably be a manageable relationship. However, there are factions in the United States that would quite like it to break down – people who are either suspicious of China or just feel that the US could do with an enemy.

At the moment, however, the US has enough enemies, which is another factor. Attention is diverted to the Middle East. What would have happened without Al Qaeda is quite an interesting question. The enemy of one's enemy is one's friend. On that principle, the Jihadists have brought some very unlikely countries together.

This article was extracted from a discussion between Donald Low, Director of the Institute of Policy Development and Mr Martin Wolf on 14 September 2006, after Mr Wolf delivered his New Insights Lecture on "Global Imbalances: Why They Matter" at the Civil Service College in Singapore.

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NOTE

1. Zoellick, Robert, "Whither China: From Membership to Responsibility?" (Remarks to the National Committee on United States-China Relations, September 21, 2005, New York City), <http://www.ncuscr.org/articlesandspeeches/Zoellick.htm> (accessed 29 March 2007).



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