

Canals and concrete: floods and the Singapore state

Singapore is at a crossroads. Since the 1990s, the city-state has not only ambitiously tried to transform itself into a global city, but more recently, has declared its excellence in balancing economic, social and environmental priorities. In 2011, Singapore was ranked the 4th most livable city in Asia (51st overall) in the Global Livability index. Five years earlier, its government had adopted the ABC ('Active, Beautiful and Clean') Waters program, where rain gardens and roof gardens would not only store water for use, but also 'beautify urban spaces, create new community focal points and enhance biodiversity.'¹

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ON THE OTHER HAND, the little island of 700 plus square kilometers in Southeast Asia is facing a backlash for its state-led planning. Supposedly far-sighted leaders had not foreseen the repercussions of a liberal immigration policy meant to propel Singapore into the first tier of the world's cities. Racial consciousness has heightened as locals blame the newcomers for raising the cost of living (housing prices in particular) while, as the Nature Society (Singapore) warned in 2009, urban development is accelerating habitat loss.² In the general elections of 2011, the ruling People's Action Party (PAP) saw its share of the popular vote dip to its lowest since 1963. Mass rallies against the immigration policy have become somewhat acceptable in a previously quiescent country.

The 1954 floods and the nadir of colonialism

Floods have affected Singapore in the last 60 years and are a microcosm of its local humanosphere, showing how the state manages economic, social and environmental imperatives. A historical perspective is useful, not least because the PAP has been in power since 1959. It highlights the government's aims and methods in dealing with the floods, and their consequences, and throws light on the nature of state-society relations in the present day.

Floods are not merely about the weather, technology or administration but relate to historical contexts. Singapore is a flood-prone area, subject to tropical storms (particularly during the northeast monsoon between December and March), is low lying and lacks adequate natural drainage. But more important than the natural conditions has been the vicious circle of development and flooding. As in other big cities in Southeast Asia, floods occurred when the volume of stormwater exceeded drainage capacity, which had been much reduced by intensive housing, infrastructural, commercial, and industrial development. After WWII, first the British colonial government and then the PAP government more robustly began to transform a rich but unplanned entrepot into an organized city-state with standardized housing and industrial estates to accommodate a growing population. Despite the attention to planning for orderly urban growth, drainage capacity could not keep up with development.

Reinforcing the socio-economic changes was the political context. In December 1954, a series of floods caused by heavy rains inundated low-lying rural areas, killing five persons. The floods became politicized, as both the British and their critics wanted to be seen to be doing something about the floods

and flood victims. The British response was technical: to plan a drainage system and straighten the flood-prone Bedok River. But this was also about orderly decolonization; it was an important departure from the pre-war laissez faire policy, indicating British responsibility to colonial subjects whom they were preparing for self-government. Conversely, the PAP, then an anti-colonial party, and the Singapore Farmers' Association, an affiliated leftwing group, sought to win mass support against colonialism. They charged the British for failing to maintain drains in rural areas and for moving squatters to an inadequately drained resettlement area in Bedok.³

Planning flood control for development

British efforts, however, became an accepted precedent for the PAP once the party assumed the reins of power. The PAP adopted prevailing Western ideas of master planning and zoned development to propel the young nation's industrial growth, focusing on physical planning and effective implementation by the bureaucracy. The goals of flood control were partly economic – to maximize land use for development – but they were also social. Indicative of a social engineering approach to urban governance, the government sought to persuade people to leave their homes during a flood (rather than stay indoors to protect belongings), to move from flood-prone squatter areas to purportedly flood-free public housing estates, and to exhort people not to discard garbage into canals and rivers.

Concrete was a much loved material as the Drainage Department constructed drains and diversion canals, improved existing drains, erected tidal gates, and dug water retention ponds. In the mid-1960s, the department built two secondary concrete-lined canals to divert stormwater from the heavily developed, but poorly drained, Bukit Timah area. Concrete was not only held to be more effective for drainage than natural canals, but also visually reassuring as a symbol of organized modernity; in 1967, the Public Works Department praised a new outlet drain as having "transformed a muddy and ill-defined creek into a pleasant, easily maintained, well-defined canal."⁴

Still, planned flood control for development did not mean the end of environmental hazards. Serious floods inundated the city in 1969 – the worst in 35 years – affecting 10,000 people in both public housing areas and less organized urban kampongs. A government spokesperson explained that it was difficult to devote much resources to deal with an event that happened only once in 35 years, but this unwittingly provided an insight into why the floods had occurred.⁵ The statement also revealed the government's understanding of the floods as a climatic – and thus technical – problem, rather than as processes embedded in the socio-economic policies it was pushing.

A decade later, in December 1978, huge floods again submerged much of Singapore, and seven people perished. This time, the crisis precipitated a mammoth state effort to build new, bigger canals and upgrade existing ones in public housing estates and the few remaining squatter settlements. A canal running through the important commercial district of Orchard Road was widened and deepened; care was taken not to disrupt the shopping activities. This concern contrasted with plenty of disruption elsewhere to people's lives between the 1960s and 1980s, as squatters were resettled into public housing in order to make way for planned canals and drains. In Bukit Timah, the Public Works Department happily announced in 1968 that it had the requisite big machinery to bulldoze unauthorized housing and meet its deadlines for drainage works.⁶

A generation later in 2010 and 2011, shoppers in Orchard Road found to their horror invasive storm waters in the streets, boutique shops and carparks. Again, the government instituted technical measures to raise the level of the area, install flood barriers and improve drainage. By this time, however, top-down responses were not so readily accepted. A state-commissioned



panel of international experts urged the government to 'educate and involve the general public proactively' in its anti-flood measures.⁷ Singaporeans, especially in the social media, began to murmur about how the lauded dam at Marina Bay in 2008, built by the state to protect low-lying coastal areas, had in effect led to flooding inland.⁸ The panel of experts had to explicitly expunge this rumor; in truth, the floods had to do more with climate change (leading to more intense storms) and recent population and urban growth, as in previous decades. Yet, there was clearly something amiss in the government's model of balancing drainage works and development.

Humanosphere

Flood control in Singapore illustrates the state's belief that modern science and engineering can transform both human nature and hazardous nature.⁹ The emphasis had been on technical expertise, physical measures and effective implementation; in short, canals and concrete. Singaporeans figured in this policy sphere only as passive citizens to be helped or ignorant people to be berated or evacuated. However, planning flood control ahead of national development has not always accounted for the increased risks of flooding in the future. This was akin to how the state had not predicted the adverse effects of the immigration policy on the costs of living, on locals' unhappiness with policy, or in connection with climatic and environmental change.

The humanosphere concept is an alternative to the Western-centric modernization theory of the immediate postwar period. The idea of the humanosphere rejects the Western notion of linear, universally applicable economic growth based on technical expertise and technology. Instead it posits an appreciation of local knowledge, adaptation and contexts as resources, rather than viewing Southeast Asia as an underdeveloped region. It may be unnecessary to forge binaries between the local and universal, or Western and Southeast Asian. But, a historical study suggests that Singapore's planners need to recognize the limits of engineering solutions to environmental problems that have political dimensions. The difficulty of resolving the perennial haze issue in concert with the Indonesian government is testament to this. The other lesson is the need to move away from an authoritarian planning model and enable the citizenry to play a bigger role in dealing with the city-state's environmental and socio-economic problems.

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Notes

- 1 Singapore, Public Utilities Board, 'Overview of Singapore's Drainage Management Approach', July 2011, p. 24. Last retrieved 29 August 2013 from http://www.pub.gov.sg/general/Documents/overview_DrainageMgmt.pdf.
- 2 Nature Society (Singapore) Conservation Committee. 2009. *Feedback for the Inter-Ministerial Committee Project on Sustainable Singapore: A Lively and Liveable City*.
- 3 People's Action Party, *Petir*, June 1956.
- 4 Singapore Public Works Department. 1967. *Annual Report*, p. 43.
- 5 *Straits Times*, 18 December 1969.
- 6 Singapore Public Works Department. 1968. *Annual Report*, p. 27.
- 7 Singapore, Ministry of the Environment and Water Resources, *Report on Key Conclusions and Recommendations of the Expert Panel on Drainage Design and Flood Protection Measures*, January 2012, p. 72 (<http://tinyurl.com/oskdlvr>). Accessed November 2013.
- 8 Singapore Government, 'Flood Management: Will the Marina Barrage cause flooding in Orchard Road?', 18 December 2012 (<http://tinyurl.com/p4acbzk>). Accessed November 2013.
- 9 Scott, J.C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition have Failed*. New Haven: Yale University Press.

Top right: The colonial state encounters the squatters in a flood-prone area, 1954. Photograph by the National Archives of Singapore.

Below left: Lining a diversion canal with concrete, c.1969. Photograph by the National Archives of Singapore.

