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Surveillance in a Globalizing City: Singapore's Battle against SARS

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Introduction

With its rapid escalation between November 2002 and March 2003, SARS represented "globalisation's dark side" (*Streats* 2003, p. 3), hopping from Guangdong in China to other epicenters including Hong Kong, Taiwan, Vietnam, Singapore, and Canada. In response to what was undeniably a major challenge to urban governance based on a "hierarchical and hermetic system of nationally-based health policy" (Keil and Ali 2007, p. 848), Singapore, as with globalizing cities elsewhere, resorted to a slew of extraordinary measures to arrest the disease. In the absence of a coordinated global governance system to match the globality of SARS as a networked disease, governments tightened their grip on local containment strategies and in the process put

to the test the reach of state surveillance and the degree of compliance among its citizens. In this chapter, we first explore the implications of surveillance strategies used during the outbreak in Singapore. For a city whose *raison d'être* depended on global connectedness, SARS resurfaced the dangers of overexposure, rekindled fears of security breaches, and renewed recognition of the city's material vulnerabilities. We show which specific groups of people were deemed as external threats and examine the emergent public discourse on the costs of keeping our borders open. Second, we investigate state and non-state, spatial and non-spatial strategies that had emerged to contain the disease. We unpack the broad public discourse on the contagion effects of SARS and the need to wage a "war" against the "epidemic" as well as how members of society recalibrate urban geographies through constructing "safe" and "unsafe" zones in reaction to contagious outbreaks.

By doing this, we are taking up Parr's (2002) call to understand the social lineaments around sickness and disease. Thus, we work through and understand SARS from a social perspective within the primary context of Singapore, taking into account the idea that specific locality issues are important to understanding outcomes (Moon 1990). Why was the island so successful (*Straits Times* 2003i,m) in its containment policies, disruptive as these were to economic and social institutions and to daily life? By examining the social responses to these measures, we hope to "relocate" public health research away from a purely medical focus. As Foucault (cited in Kearns 1994, p. 112) argued, illness may be biologically determined, but because it is observed and treated by others, we must address issues such as politics, discrimination, and civil rights (Swain et al. 1994; Gleeson 1996).

The Epidemiological Outbreak and Measures to Fence in SARS

Medical knowledge on SARS was very limited when it began its insidious spread in Singapore in early 2003. The disease was called "atypical pneumonia … never before seen in humans" (WHO, cited in Chew 2003, p. 1). To separate the probable from suspected cases, temperature and other symptoms such as cough, breathing problems, laboratory test results, and X-rays were used. The index case patient, Patient A, was admitted into Tan Tock Seng Hospital on March 1, 2003 after returning from a trip to Hong Kong. While two others who accompanied this patient on the trip recovered, 24 of Patient A's primary contacts became infected. These included eight nurses, a health attendant, five patients in the same ward, and ten visitors. The first person to die, on March 25, 2003, was the father of Patient A. The second was the pastor of Patient A. SARS started off primarily as a nosocomial (hospital-acquired) infection. According to Gopalakrishna et al. (2004),

the early stages were the most detrimental because lack of knowledge prevented quick action to isolate and contain, leading to the spread of SARS into the community. Infected individuals brought the infection from the hospital to another epicenter, Pasir Panjang Wholesale Market. Table 5.1 shows the profile of those infected. In total, there were 238 cases and a fatality

Table 5.1　Profiles of probable SARS cases

	Number	%
Gender		
Male	161	67.6
Female	77	32.4
Total	238	100.0
Median age in years (age range of infected persons in brackets)	35 (1–90)	–
Number of deaths	33	13.9
Date onset of first probable case	February 25, 2003	–
Date onset of last probable case	May 5, 2003[a]	
Profile of cases		
Healthcare workers	97	40.8
Family/household members	55	23.1
Inpatients	31	13.0
Visitors to hospital	20	8.4
Social contacts	15	6.3
Imported	8	3.4
Co-workers in Pasir Panjang Wholesale Market	3	1.3
Taxi drivers	2	0.8
Flight stewardess	1	0.4
Undefined	6	2.5
Total	238	100.0
Location of transmission		
Hospital/nursing home	178	74.8
Household	33	15.5
Overseas	8	3.4
Community	7	2.9
Pasir Panjang Wholesale Market	3	1.3
Taxi	2	0.8
Flight	1	0.4
Undefined	6	2.5
Total	238	100.0

[a] This does not include the single isolated case that occurred in September 2003, involving a researcher working on the virus in a research laboratory.
Source: WHO (2003c).

rate of 13.9 percent (WHO 2003c). It was not until May 30, 2003 that the WHO removed Singapore from the list of countries affected by SARS. On September 9, 2003, a new but isolated case occurred, as a laboratory researcher working on the virus became infected. No further cases have been reported since then.

The high fatality rate and the rapid spread caused much concern. To elicit the cooperation of the public to contain the disease, Singaporeans were warned about the methods of transmission; for example, close contact (droplets), and the length of time the virus was expected to stay alive on a surface (*Straits Times* 2003d). The incubation period was defined as ten days before the onset of symptoms. Singaporeans were also informed how the initial index case was imported from Hong Kong and the subsequent spread of SARS was traced over time and space, both locally and on a global basis.

Based mostly on biomedical information about the disease, the Singapore government designed isolation and containment strategies. In the first instance, Tan Tock Seng Hospital was designated the SARS hospital. Isolation wards were set up and arrangements made for special ambulances to transport SARS cases to the hospital. Doctors were not allowed to practice in more than one hospital during the SARS outbreak period and a certain number of healthcare workers were dedicated to provide care in the SARS wards. A "No Visitors" rule was imposed for all public hospitals except those treating children and obstetric cases. There was extensive use of N-95 masks, gloves, shoe and head covers, goggles, and gowns. Frequent hand washing, change of clothing, and disinfection of facilities and isolation rooms were carried out (Chew 2003; Leung and Ooi 2003). A ring of protection had thus been set up.

Outside the hospitals, contact tracing and home quarantine were put in place to further tighten the grip around the disease. Checks were constantly done to monitor people. In all public places, individuals had to have their temperature taken (later, thermal scanners were introduced) before they were allowed into public buildings, offices, and some residential locations. Common areas – for example, elevators, public toilets, and hawker centers – were disinfected more frequently. Schools, kindergartens and childcare centers were especially vigilant in an effort to protect the children. In fact, schools were closed for two weeks. In addition, a special television channel was set up to educate Singaporeans on preventive measures. Here, details were disseminated on what to do if one suspected oneself or family members to be infected. Doctors were instructed by the Ministry of Health (MOH) on diagnostics and containment/protection strategies such as the setting-up of fever stations away from the main human thoroughfare.

As a globalizing city-state, Singapore is extremely open to people coming for leisure, work, education, or other reasons. The airport, port, road, and rail openings into the country were equipped with thermal scanners, each

costing SGD90,000 (*Straits Times* 2003h). Foreign workers who came to Singapore to work as construction workers, including those from the Peoples' Republic of China (PRC), were subject to a 14-day quarantine. Foreign professionals working in Singapore, as well as Singaporeans who had visited SARS-affected countries, were asked to voluntarily quarantine themselves for ten days. Students were likewise asked to do so and to declare their overseas visits to the school. Anyone who had a temperature above 37.5 °C was asked to stay away from school or work.

From the many recommendations and policies implemented in Singapore, it is clear that medical understanding of contagion guided policies on containment. These seriously affected the daily routines of many Singaporeans and disrupted people flows from outside the city-state. How did Singaporeans react to quarantine and confinement, especially if the former entailed the use of web cameras for policing? Should the names of those who were served such orders be made public? Would public naming infringe the privacy and rights of individuals? Did hospitals have a right to prevent Singaporeans from seeing their loved ones who were ill and who needed their moral support? Evidently, Singaporeans sensed unequal distributions of power (Dyck and Kearns 1995). Health, being basic to human endeavor, may be regarded as a foundational justification for government action. However, not everyone accepts the diminution of individual autonomy and privacy in exchange for collective benefits (Gostin 2001). Certainly there will be degrees of acceptance in such social contracts, even if they pertain to the "new global threat" (Koh et al. 2003). These form the grist for understanding the disease from a social point of view, with regard to which the next sections outline three broad areas of discussion: how security becomes redefined as global movements of people threaten to spread infectious diseases; social responsibility in maintaining surveillance and control for good public health; and fear in shaping perceptions of safe and unsafe places when infectious diseases threaten.

Global Linkages in a Time of Crisis

In conventional security terms, since statehood is tied to territory, movements of population can undermine security, as people have long been known to be responsible for the transmission of disease. As the flows of people increase in contemporary times, the rhetoric used in conventional discourse on security is now employed for disease; for example, we talk about the "fight against disease" or use the term "a time bomb" (Thomson 1997, cited in Graham and Poku 1998, p. 226). For nations that are well plugged into the global economy, such movements can only grow in the foreseeable future. Will the potential threats to health and security be put aside for more immediate benefits?

To understand Singapore's reaction to SARS, there is a need to under-
stand Singapore's rationale for sustaining "exceptionalism" in the global
context. Leifer (1998, p. 19), for example, wrote that Singapore's
"circumstances and condition as a city state … are *sui generis* in the modern
world". Agreeing, Ow (1984) says that Singaporeans have a perennial "crisis
mentality." They are constantly reminded by the government that Singapore's
position in the global economy is a very vulnerable one. Singaporeans need
to work hard to sustain the country's economic and social growth. This
mindset has helped to direct Singaporeans' energies in the same direction.
In 2003, Singapore recorded a GDP of SGD38,023 per capita, compared
to SGD1,567 per capita in 1965 when the country first became independent
(Statistics Singapore 2004a). Much of the growth has been attributed to the
purposeful global engagement of the island's economy. While Foreign Direct
Investments (FDI) into the country was SGD217 billion at the end of 2001,
Singapore also invested SGD131 billion abroad (Statistics Singapore 2004b).
As a business epicenter, Singaporeans have to act responsibly so that inves-
tors, entrepreneurs, and business executives will still continue to come. At all
costs, investment confidence in the island should not be diminished by the
SARS outbreak (*Business Week* 2003).

In addition, Singapore is a cultural marketplace in which "culture and the
arts … form important strands in … our city life" (Ministry of Information
and the Arts 1998/99, p. 1). The global linkages mean that fragments of
people and cultures hailing from different parts of the globe are expected in
Singapore. Many of these are sojourners, people circulating among different
cities, or shuttling between the global city and the home nation. As national
borders become more porous in keeping with the pace of globalization,
transnationalism, describing the way people straddle "home" and "host,"
becomes more common. Thus, besides the 7.5 million visitors who passed
through in 2002, Singapore's transnational profile also includes foreign
talent who are highly skilled and highly paid professionals, the 650,000 low-
waged unskilled migrant workers who come for two-year contracts to work
on the construction sites or as domestic maids, and expressive specialists
who are creative individuals and who participate in the cultural scene in
areas such as art, fashion, design, photography, film-making, writing, music,
and cuisine (Teo et al. 2004).

Openness of the economy and society has assisted the country in the past
and this quality is fundamental to its global city aspirations. What happens,
however, in a time of crisis such as the SARS threat? Will the fluid flows of
people coming into the country for business, work, study, or leisure be
deemed as "overexposing" Singaporeans to the SARS virus? Exactly who
becomes labeled an "outsider" at this time, and how much will openness
continue to be valued? It is to these issues and questions that the following
sections will explore.

Social Responsibility, Surveillance, and Control

Social responsibility is a rhetoric that has often been used in Singapore to marshal the people toward the same goal. Chua (1995) suggests that the successes arising from this approach has given the People's Action Party (PAP) political legitimacy in Singapore and in part accounted for its re-election time and again. The ideological framework of "national survival," which sees threats emanating from outside of Singapore as well as from within (e.g., Singaporeans who broke quarantine orders), helps to discipline society. During the height of the outbreak, political leaders talked about the "war" against SARS and fighting at the "battlefront" (*Straits Times* 2003a) in an attempt to rally Singaporeans to work cooperatively with the state. What is the public reaction to this discourse?

In the neoliberal context of contemporary societies such as Singapore, Fischer and Poland (1998) assert that community policing in public health is no longer as coercive and interventionist. Instead, discipline and regulation is less punitive (Foucault 1979, 1991). Formal processes from the state recede in the governance of public health, while self-regulatory civil and individual mechanisms come forward. Using knowledge and raising issues related to risk and responsibility, individuals and communities are moved to act independently or as a group to manage and reduce harm in public health maintenance. Self-regulation by these "responsibilized" subjects (Fischer and Poland 1998, p. 188) is considered progressive, since it involves voluntary action from private, civil, and commercial institutions. However, in a country where state influence is as strong as it is in Singapore, how much confidence does the leadership place on self-regulation? Raising public consciousness is presumably insufficient, because the state continues to impose surveillance strategies and use legislation to enforce compliance.

Enforcement poses less of a problem when it is carried out in public spaces, as the state's jurisdiction in the policing of these spaces is seldom questioned in Singapore. However, when surveillance and control begins to intrude into private spaces, it becomes more problematic. Using the argument that medical privacy is not absolute in the case of infectious diseases (Bayer and Fairchild 2002), surveillance and control throws into relief many issues concerning human rights, freedom as well as equality. Since new technologies such as detection devices and cameras help to transcend space, we ask how much infringement can be tolerated.

Safe and Unsafe Spaces

For humans, spaces are not isotropic or homogeneous, but laden with meaning such that behavior becomes affected by perceptions of these spaces. For

example, fear, especially of the unknown, can strongly influence behavior. In this study, we uncover the extent to which fear of SARS affected the spatial behavior of people as they constructed "safe" and "unsafe" locations in their minds.

Methodology

Ideally, in-depth qualitative interviews would be effective in teasing out the nuances in public opinion on SARS. However, there was the ethical issue of exposing interviewers to infection, in addition to time and money constraints. Hence, we opted for the telephone questionnaire survey method, as this would give us a good overview of public opinion. After an initial pilot study in early June 2003, the actual survey was conducted in mid-June to end July 2003 on Singaporeans and permanent residents. Snowballing was used to construct a sample that was close to the national profile. A team of 69 trained surveyors was asked to use its contacts to get the sample profile assigned to them.

The questionnaire survey comprised sections on the demographic characteristics of the respondents; the implications of SARS on Singapore's open economy and society; surveillance and control as preventive measures to curb SARS; and the spatial avoidance behavior of the public. Respondents were asked whether they agreed with the measures that were implemented and if they avoided certain places. As the study was conducted close to the height of the SARS outbreak, we did not find statistically significant variations across socio-demographic variables. This tallies with the findings of Quah and Lee (2004), who reported variations only for the preventive measure of washing hands. More women and people aged above 35 took this preventive measure.

A total of 650 surveys were completed, of which 634 were successful. The data was entered into SPSS for analysis and secondary sources of information were consulted, because newspaper reports and public inputs in the form of letters to the press provided valuable insights on public discourse.

Discussion

Global interconnections during SARS

As Singapore works toward global city status, global linkages figure prominently in the imagination of the average Singaporean. On the one hand, there was widespread support to curb the inflow of people who could carry the threat of SARS into Singapore. On the other, Singaporeans were

practical enough to realize that total exclusion would have adverse effects on the economy and on jobs. This ambivalence over the "good" and "bad" aspects of globalization was revealed in the findings.

For instance, the high-traffic Malaysian border raised practical issues of surveillance because of its sheer volume and frequency. Open borders suddenly become problematic, as Singaporeans constructed visions of the "enemy" infiltrating into the country. Singapore was by no means the only country with such a perception. Thai airports turned back fliers who showed flu-like symptoms. Malaysia imposed a visa freeze on people from the PRC, Vietnam, Canada, Hong Kong, and Taiwan. The PRC hit back by banning tours to Malaysia, Thailand, and Singapore. At the height of SARS, many companies in Singapore imposed an informal non-essential travel ban. This measure is consistent with travel advisories about SARS-affected locations such as the PRC, Taiwan, Hong Kong, and Toronto. In our survey, 80 percent of the respondents were willing to stop travel to SARS-affected countries for business or leisure.

There were other nuanced imprints on globalization. While foreign talent and foreign workers are both necessary to the sustenance of a labor-short economy, the former is encouraged to take root in Singapore while the latter is subject to measures that ensure their transience in the city-state (Yeoh and Chang 2001). The cosmopolitanism in Singapore's vision of a global city is obviously not an all-inclusive one and when SARS presented a health problem, this discrimination became more apparent in the social landscape of Singapore. Although almost 78 percent of the respondents said that it was discriminatory to confine newly arrived foreign contract workers (the unskilled) compared to self-quarantine for employment pass holders (the skilled), the majority (83 percent) still agreed with the use of this measure as a way to combat SARS. In the end, one wonders if these exclusionary policies, which are for the most part supported by Singaporeans, relegate foreign contract workers to the equivalent of the "human flotsam and jetsam" mentioned by McNeill (1976, p. 120).

Besides the foreign workers, PRC students studying in Singapore also bore the brunt of SARS. Since there were over 23,000 PRC students at that time (Ministry of Finance, Singapore Government 2003), to prevent them from going on home visits or leaving the country during the outbreak, their existing student visas would be revoked if they tried to leave. In addition, they had to pay a $1,000 deposit before leaving the country. In spite of the general consensus that SARS was dangerous, 42.7 percent of Singaporeans felt that revoking the visas was harsh. Nonetheless, 50.6 percent still stood by the idea that the visas ought to be revoked for students who insisted on returning to the PRC.

Where SARS had negative economic impacts, Singaporeans were less stringent about protecting the borders. For instance, it was then Prime

Minister Goh Chok Tong who led the drive to get ASEAN (Association of Southeast Asian Nations) members to work out cross-border controls at a summit on SARS convened in April 2003. This included dialogue with the PRC, Japan, and South Korea (*Today* 2003). As tourism was badly hit, Singapore's national carrier, Singapore International Airlines (SIA) dropped airfares in an attempt to bring back the tourists, while at the same time cutting the number of flights by 20 percent to save on costs (*Straits Times* 2003g). Awareness of the volatility of Singapore's economy to external forces led 84.5 percent of our respondents to agree that the airlines were correct to lower their airfares to bring tourists back.

Besides the airlines industry, the Meeting, Incentive, Convention, and Exhibition (MICE) sector, retail, food, and entertainment were also severely affected (Lorne 2003). While the government tried to cushion the economic impacts of SARS, at ground level, the measures had limited impact. Compared to Vietnam, the PRC, and Hong Kong, where the loss to GDP by tourism was only 15 percent, 25 percent, and 41 percent respectively in 2003, Singapore's loss was 43 percent (World Travel and Tourism Council 2003).

Travel bans, monitoring inbound tourist traffic by the use of thermal scanners, limiting business travel and making foreigners working or studying in Singapore feel excluded represent an increasing wariness about external threats. Where inter-country movements were once embraced, SARS surfaced the issue of security threats coming from without. Spaces were once again carved by political boundaries governed by disciplinary regimes so as to articulate discourses of "safety" and "protection" within localized contexts. As is the case with many protocols to protect the world's environment, when SARS hit, countries acted "local" even if they thought "global."

Social responsibility in the Singapore context

The analysis of social responsibility in public health begins with an examination of the social construction of the disease. SARS is suggested above as contagious and dangerous. The term "super-spreader" was used in the Singapore context on index cases. Index case Patient A, who eventually recovered, had her encounter with the disease featured on television (Mediacorp Channel 5 2003a). Her name was mentioned in the newspapers, generating a great deal of debate. Her "wrongdoing" was to bring SARS into Singapore and to have caused the death of loved ones. The psychological trauma that she went through was also recounted in the program, but the damage was already evident. She had caused harm and she felt marginalized by Singapore society. She was not the only one to feel ostracized. A physician talked about feeling victimized: "When I go out, people point at me and give me funny looks," she said, because they wondered why she delayed her decision to send her SARS patients to the hospital (*Straits Times* 2003k).

The local newspapers also reported that healthcare workers, nurses in particular, were avoided by Singaporeans (Mediacorp Channel 5 2003b; *Straits Times* 2003l) when they boarded the Mass Rapid Transit System. They could be easily identified, as they wore their uniforms. Some hospitals attempted to overcome this problem by making the nurses change into street attire before they left the hospital. Indeed, how the body is represented and read has significant bearing on surveillance and the use of space in the context of SARS. Lim (2003) also showed that Singaporeans feared discrimination and were ambivalent about naming quarantined individuals to non-family members. As surmised by a newspaper correspondent, "SARS is SARS, single syllabled and sibilant. The name hisses with the clarity of a deadly snake" (*Straits Times* 2003f, p. 16).

Compared to other diseases such as AIDS, bird flu, mad cow disease, or other recent epidemiological outbreaks, SARS had a far higher level of exposure in this small island state. There was a mobilization of resources of a magnitude that is rare in the country's history. Government, health workers, NGOs and volunteers, the private sector, schoolchildren, the military, and the police all took part in the battle against SARS. The unknown created a landscape of fear and brought the problem to crisis proportions. There was less concern about bird flu and mad cow disease, as it was believed that the authorities could block the entry of animal carriers and that Singapore, being a non-rural society, would be immune. AIDS was conceived as a lifestyle threat, but SARS was different because the carriers were human and so little was known about the disease.

We found much support for negative social constructions in our survey. In the study, the majority (59.1 percent) worried about SARS. Of these 375 respondents, over 90 percent worried about fatality and contagion. Alarm was thus fairly extensive in Singapore. Many also agreed with the state's call to contain the disease by exercising social responsibility on a daily basis. This included washing their hands (of which 88.8 percent of the total sample of 634 agreed), and exercising and getting enough rest (85 percent of total sample). Only 59.1 percent felt they should wear a mask, although very few actually did (unlike Hong Kong and the PRC) because the weather conditions made it impractical. The cognitive dissonance tallies with the findings of Quah and Lee (2004), who found that only healthcare workers consistently wore masks because of their high exposure to infection.

The high proportion of "responsibilized" citizens willing to cooperate has a fairly long history in Singapore. In the past, Singaporeans were urged by the PAP to submit to state policies because they were for the common good of the people. Ethnic, religious, and class differences were put aside so that all could reap the benefits of economic progress in the nation-state. The "war" rhetoric used on SARS echoed a similar approach to galvanize

Singaporeans to work toward a common goal during this period of "crisis." No fewer than ten cabinet and junior ministers gathered together to meet 1,800 grassroots, business, and youth leaders in mid-2003. The leaders emphasized that, "there is no excuse for anyone in Singapore not to know the part he has to play … All of us as ordinary citizens … have a part to [play in] fight[ing] SARS" (*Straits Times* 2003b, p. 1). It therefore came as no surprise that 93 percent of the total sample was willing to self-quarantine if the need arose. In addition, 77.4 percent was willing to reduce movement within their workplace or school.

Tensions, however, did exist, especially if the policing impinged on peoples' private spaces or threatened to make private spaces public. For example, 60.9 percent protested against broadcasting the names of those who were under such orders. One-third (33.1 percent) of the total respondents were against the installation of web cameras and tag surveillance of those under home quarantine orders. While this is certainly not a majority, for those whose private spaces were actually infringed upon, the reactions were quite negative. In a letter to the forum page of the local newspaper, a complainant under quarantine asked "the relevant authorities [to] enlighten" why CISCO personnel had to call at his home at "the ungodly hours of 2.00am on the first day and 2.30am on the second" (*Straits Times* 2003c, p. 14).

Other complaints about over-surveillance included the inflexibility of some schools. Many parents complained that their children were turned away because their temperature was above the standard 37.5 °C. Some medical practitioners reasoned that children often had higher temperatures as they tended to be more active. Consequently, teachers became more flexible. Nevertheless, a problem had emerged as parents found it difficult to make alternative childcare arrangements. In our survey, almost a quarter (24.4 percent) felt that the closure of schools was unnecessary. This problem was quickly tackled when the Ministry of Manpower sent a circular to the civil service to be flexible about allowing one member of such households to stay away from work. Private enterprise followed suit. A last example of over-policing is the "No Visitors" rule in hospitals: 18 percent of the respondents said that this policy was excessive. They felt that their loved ones needed their emotional support. Ultimately, the state had to respond and video links were made available to disgruntled individuals.

The numbers discussed in the preceding two paragraphs are by no means large, but they help to reveal the cognitive dissonance regarding public health policies. So long as the measures did not infringe on personal spaces or inconvenience an individual too substantially, there was support. Where this was absent, the complaints were forthcoming, causing the state to fine-tune its measures.

SARS and spatial barriers

Some sense of territoriality has been alluded to in the previous paragraphs. This section discusses the practice of space differentiation by Singaporeans during the outbreak. Spatial boundaries can be very specific as a means of managing risk, as in the case of selecting Tan Tock Seng as the "SARS hospital." The Pasir Panjang Wholesale Market was the other location that was closed off by the police. Besides boundaries that distinguished the "inside" from the "outside," spaces were also sectionalized as a precaution. All tertiary institutions divided their campuses into zones that could be isolated in case of an outbreak. Many companies in the private sector that felt that they could not withstand or afford disruptions in their businesses (e.g., broking houses) implemented crisis plans that included putting their officers into two or more locations. Working from home and teleworking were also temporary strategies that were employed until normality returned.

In our survey, we asked respondents how the outbreak of SARS had affected their movement across space. We asked if they purposely avoided the SARS hospital and other hospitals where SARS cases were also reported. We also asked about the wholesale market and about Changi Airport, where SARS was likely to be "imported" into the island. A spatially proximate public location to the SARS hospital was also included in the survey; namely, Novena Square Shopping Center, opposite Tan Tock Seng Hospital. From Table 5.2, the majority of the respondents avoided hospitals as a whole (72.2 percent), with 15.5 percent singling out the SARS hospital. Pasir Panjang Wholesale Market is a popular place to make bulk purchases for wet groceries such as vegetables, meat, and fruit. Not only are hawkers and restaurateurs found there, but even housewives make their way to the center on a daily basis. Due to the high volume of human traffic, the location was closed for 15 days while disinfection was carried out. Two-thirds of the respondents (62.5 percent) said that they avoided this place. High-risk locations such as polyclinics, private clinics, the airport, and buildings in close spatial proximity to possible "epicenters" were also mapped onto respondents' avoidance zones. One-quarter of the respondents (24.9 percent) said that they avoided travel by taxi. This arose because a taxi driver was infected by a SARS patient who he had unsuspectingly ferried. This taxi driver eventually died, but it was only in the autopsy that the connection was made. As a consequence, taxi companies in Singapore had to disinfect their taxis twice daily and the drivers were asked to not use the air-conditioning in their vehicles. Taxi drivers took their temperatures twice a day and had labels pasted onto a prominent location to say that they were "OK." Perceptions of SARS did indeed affect the spatial behavior of respondents, creating an intricate geography of "safe" and "unsafe" areas.

Table 5.2 What was avoided during the SARS outbreak (%)

Locations where infections were reported	
Tan Tock Seng Hospital	15.5
Singapore General Hospital	4.3
National University Hospital	3.5
Kandang Kerbau Hospital	1.9
Pasir Panjang Wholesale Market	62.5
High-risk locations	
All hospitals[a]	72.2
Polyclinics	53.2
Private clinics	32.2
Changi Airport	30.6
Novena Square Shopping Center	36.3
Travel in airplanes	30.3
Dental clinics	40.4
Low-risk locations	
Public housing estates and town centers	12.9
Neighborhood markets and hawker centers	10.6
Restaurants	16.9
Orchard Road shopping belt	18.0
Government buildings	11.2
Public transportation	
Travel in MRT and public buses	12.0
Travel in taxis	24.9
Others	
Meeting friends and relatives	8.0

[a] If the respondent selected "All hospitals," he or she could not select the named hospitals.

Source: Survey data.

Conclusion

Biomedical understanding of SARS was limited when the outbreak begun. Until more knowledge could be gathered, the WHO recommended conservative actions in order to be safe. Singapore's vulnerability left its leaders no choice but to take this approach. Draconian measures described above were implemented with little hesitation as to their social implications. From travel bans to outright penalties against foreigners working or studying in Singapore, SARS erected physical as well as mental borders against the globalizing aspirations of this city-state. As the seemingly incalculable disease increased both the messiness of urban life (Keil and Ali 2007) and the urgency for public order, security concerns were accorded a much higher

priority compared to civil rights and democratic processes. Military metaphors were evoked in calling for a "war on SARS," further legitimizing the more drastic curbs on civil liberties.

In addition, the high level of public consciousness raised led to general agreement and support for the many initiatives taken by the state, as well as endorsement of the speed with which the problem was tackled. Singaporeans put up with the spatial barriers erected and voluntarily avoided high-risk places, as these were conceived as potentially dangerous spaces. Nonetheless, the politics of containment revealed that discrimination, exclusion, and protection of privacy remain social issues of some contention. As much as Singaporeans worried about the SARS threat, they also expressed discontent with intrusions into their privacy.

There are several lessons to be learnt from the SARS outbreak. In the immediate term, steps can be taken to deal with future threats similar to SARS. In Singapore, the government has already ascertained that one hospital is not sufficient for control of infectious diseases. Containment as a strategy has worked and will continue to be employed. However, the old priority of cost efficiency is being reviewed, because many infections had been transmitted in eight-bedder wards (Tambyah 2003).

In the longer term, the social disruptions need to be properly considered. Singapore's specific local context in terms of its historical experience may not be suitable for other countries. Taiwan also implemented the ring fence concept, but the quarantine order failed miserably. It was the healthcare workers (nurses and doctors) who broke free from their confinement and fled (*Straits Times* 2003e). Similarly, China reported instances of rioting in quarantine centers in two provinces (*Straits Times* 2003j). The politics of containment must examine receptivity to legislative decisions in the light of the historic and cultural specificity of the location. Transparency is something of a recent phenomenon in mainland Chinese politics (White III 2003). The sluggish response of Hong Kong was blamed on the desire to maintain business as usual in this international hub (Ngok 2003), poor communication among government bodies and with the public, as well as the weaknesses of health governance under the concept of "One Country, Two Systems" (Ng, Chapter 4). In the case of Taiwan, Ho (2003) attributes excessive politicization – for example, laying the blame on China and on the opposition – as the main problems for ineffective management of the disease. While most would subscribe to greater transparency and better coordination between government bodies at a national level as well as with the WHO and the CDC (Centers for Disease Control and Prevention), ultimately the response to infectious diseases will depend on social values, social conditions, and political contingencies. In the case of Singapore, we have objectively shown that there was fairly widespread support for measures that other countries were unwilling to adopt. The SARS episode revealed that compliance

is effective and necessary for the containment of infectious diseases. The limited amount of questioning, the rapid rate of adoption, and the smooth carry-through of many of the policies came down to two things in Singapore: strong social discipline and the crisis mentality of the people. Whether these are replicable in a different time and space is another matter.

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