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Jonathan Schwartz
State University of New York at New Paltz


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The East Asia Institute
909 Sampoong B/D, 310-68 Euljiro 4-ga
Jung-gu, Seoul 100-786
Republic of Korea
Tel 82 2 2277 1683
Fax 82 2 2277 1684



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In the aftermath of the SARS epidemic much was made of China's effective efforts at disease control and prevention. China's perceived success in controlling SARS stands in stark contrast with Taiwan's troubled response to its own SARS outbreak. Why does Taiwan, a geographically small, yet densely populated country with a democratic government, wealthy and modern knowledge-based economy, fail to effectively respond to SARS whereas big, heavily populated, relatively under-developed and soft authoritarian China succeeds?

To address this question, I focus on disease control efforts in Taiwan, considering relevant parallels in Chinese infectious disease control to draw out the causes for Taiwan's poor infectious disease response. I use the SARS epidemic as a case study, comparing specific policies and actions taken by Taiwan and China in response to their respective SARS outbreaks.

As I am particularly interested in understanding the factors influencing Taiwan's response, I focus initially on Taiwan, describing the genesis of SARS in Taiwan and its infectious disease response capacity. I then draw on previous studies of China's SARS response to highlight the differences between the Chinese and Taiwanese SARS responses. In the final section I draw on this comparison to identify broader lessons regarding factors influencing effective infectious disease response.



Genesis of the Taiwan SARS Epidemic

SARS was first identified in November 2002, in China's Guangdong province. The disease crossed the Taiwan Strait in mid-March 2003, with the first Taiwan case diagnosed on 10 March of that year. By the conclusion of what became a global outbreak, Taiwan had earned the dubious distinction of the world's third largest outbreak location. Indeed, of the 32 countries affected by SARS, Taiwan was the only one to suffer a sustained outbreak after the WHO issued its 12 March Global Alert on atypical pneumonia and its 15 March Emergency Travel Advisory.¹

Taiwan's SARS epidemic is usefully divided into two distinct stages. In the first stage, 10 March to 20 April 2003, 28 probable SARS cases were identified with no fatalities.² During this phase, 78 percent of cases were imported from China or Hong Kong, while the remaining cases developed from household or social contact with a SARS patient (16 percent) or through contact in a hospital setting (6 percent).³ During this first stage, hospitals were able to effectively care for all SARS patients. In addition, effective contact tracing ensured that of the 28 probable SARS cases reported, only four resulted from secondary transmission.⁴

Believing SARS to be under control, on 12 April the WHO changed Taiwan's status from that of an "affected area" to that of an "area with limited local transmission".⁵ The Taiwan government celebrated its changed status, boasting its "three zero" record: zero deaths; zero community infections and zero exported cases.⁶ Partially to celebrate its success in containing SARS, Taiwan hosted an International SARS Symposium on 20 - 21 April. Perhaps ironically, it was at this time, with the government widely publicizing its success with SARS that the outbreak entered its second, more dangerous stage of widespread community transmission.

¹ Bradsher, Keith. "As SARS Ebbs, W.H.O. Lifts Its Advisory on Taiwan" *The New York Times* June 18, 2003.

² "Severe Acute Respiratory Syndrome - Taiwan, 2003" *MMWR Morbidity and Mortality Weekly Report*. 52 (20) (May 23, 2003): 461.

³ "Consensus document on the epidemiology of severe acute respiratory syndrome (SARS)" *World Health Organization: Department of Communicable Disease Surveillance and Response*. (16-17 May 2003). <http://www.who.int/csr/sars/en/WHOconsensus.pdf> Accessed 4 March 2006.

⁴ "Severe Acute Respiratory Syndrome - Taiwan, 2003" *MMWR*: 461.

⁵ Limited local transmission meaning there was "no evidence of international spread from the area since 15 March 2003 and no transmission other than close person-to-person contact." *Affected Areas - Severe Acute Respiratory Syndrome (SARS)* (12 April 2003). http://www.who.int/csr/sars/areas/2003_04_12/en/index.html

⁶ Agnes S. Ku and Horng-luen Wang, "The Making and Unmaking of Civic Solidarity: Comparing the Coping Responses of Civil Societies in Hong Kong and Taiwan during the SARS Crisis," *Asian Perspective* 28(1) (2004): 124.



According to Dr. Chen Tsai-Ching, then Director-General of the Taiwan CDC (Centers for Disease Control), during the second stage of SARS, the majority of community transmissions occurred as a result of one “super spreader.”⁷ The super-spreader, a laundry worker at Taipei Municipal Heping Hospital, infected over two dozen patients and staff members, initiating an ever widening circle of infection.

On 12 April 2003, the laundry worker sought medical care for a fever and diarrhea. However, since he suffered from other health problems as well, he was treated for these and released the same day. Returning to work, the laundry worker interacted with staff, patients, and visitors, and slept in the hospital’s basement. With his condition failing to improve, he returned to Heping Hospital’s emergency department on 14 and 15 April and was again misdiagnosed, this time with infectious enteritis. On 16 April he was placed in a ward with forty other patients. Only on 18 April, 6 days after his first attempt to obtain medical treatment, did an infectious disease specialist diagnose him with SARS. However, fearing that reporting the existence of SARS in the hospital would deter the general public from seeking medical care at the hospital (resulting in significant revenue loss) the specialist delayed reporting the diagnosis to his superior. In turn, his superior further delayed reporting the case to the Taiwan CDC. As a result, information about the diagnosis reached the CDC only two days after the initial diagnosis. By this time, SARS had begun rapidly spreading throughout the hospital.

On 24 April, 2003, Heping hospital officials responded to rapidly spreading SARS cases by closing down the facility. All patients were then expected to either independently or through the health system, transfer to other hospitals for continuing care. This patient dispersal led directly to infectious disease outbreaks in eight additional hospitals in Taipei and Kaohsiung.⁸

During the second stage, probable SARS incidences increased six-fold in less than one month. Of the new cases, 89 percent were hospital-acquired, two percent were the result of household or social contact with a SARS patient, and nine percent were travel related.⁹

⁷ Community transmission is opposed to secondary transmission to family or health care worker contacts. “Super spreader” is defined as a highly infectious person who spreads the agent of an infectious disease to many other people. In Taiwan there were a total of four super spreaders identified. <http://www.medterms.com/script/main/art.asp?articlekey=22951> <accessed 9 February 2007>.

⁸ “Severe Acute Respiratory Syndrome – Taiwan 2003,” *MMWR*: 462-3. Adding to the disease spread, Taiwan’s National Health Insurance Program significantly reduces patient reimbursement for care if they remain in hospital longer than 20 days. Therefore, patients commonly transfer to new hospitals after 20 days to ensure continued coverage.

McNeil, Donald G. Jr., “The SARS Epidemic: The Virus; Most Taiwan SARS Cases Spread by One Misdiagnosis” *The New York Times* (8 May 2003).

⁹ “Consensus document on the epidemiology of severe acute respiratory syndrome (SARS)” *World Health Organization: Department of Communicable Disease Surveillance and Response*. (16-17 May 2003). <http://www.who.int/csr/sars/en/WHOconsensus.pdf>.



When, on 5 July 2003, Taiwan was finally removed from the WHO list of areas with recent local disease transmissions, the island had reported 346 confirmed SARS cases and 37 SARS-related deaths.¹⁰

Public Health in Taiwan¹¹

When the Nationalists arrived in Taiwan in 1949 they found a public health system badly damaged by the impacts of WW II on this formerly Japanese-controlled island. With World Health Organization (WHO) guidance, Taiwan's Nationalist government designed a pyramid shaped public health system with health stations in rural townships and health rooms in remote and mountainous areas. By 1954, 360 health stations and 140 health rooms had been established to provide diagnosis, treatment and control of infectious diseases.¹² The government's priority in terms of public health was well expressed by the motto that "public health (i.e. preventive care) is more important than treatment (curative care)."¹³

An outcome of this prevention first policy was a steep decline in the number and extent of infectious disease outbreaks in Taiwan. Thus, between 1954 and 1970 the annual number of cases of recognized infectious disease outbreaks declined from 6,000 to 300.¹⁴ By the 1980s the preventive care approach adopted by Taiwan's public health system achieved eradication of numerous infectious diseases, including malaria, infantile paralysis and Japanese encephalitis.¹⁵

¹⁰ Originally the record was 674 cases and 84 deaths however, as of 11 July 2003, 325 in Taiwan cases were discarded because laboratory information was insufficient or incomplete for 135 discarded cases, of which 101 died.

Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003. WHO. http://www.who.int/csr/sars/country/table2004_04_21/en/index.html

¹¹ For an equivalent study of the Chinese public health system see Jonathan Schwartz, R. Gregory Evans and Sarah Greenberg, "Evolution of health Provision in Pre-SARS China: The Changing Nature of Disease Prevention," *The China Review* vol. 7(1) (Spring 2007): 81-108.

¹² Sue-feng Teng, "Rebuilding the Missing Link – Toward the Rebirth of Taiwan's Public Health System." *Sinorama* (Aug 2003): 72-79. <http://www.sinorama.com.tw/en>

¹³ According to Rothstein et. al., 5.4% of Taiwan's GDP was invested in health care. Taiwan enjoyed among the highest life expectancies in Asia. *Quarantine and Isolation: Lessons Learned from SARS* (p. 99) <http://www.louisville.edu/bioethics/pubilc-health/sars.pdf> <accessed 27 June, 2007>.

¹⁴ Legally recognized diseases are the diseases classified as appearing in any of the four categories discussed later in the article.

¹⁵ John Luke Gallop and Jeffrey Sachs, "The Economic Burden of Malaria," *American Journal of Tropical Medicine and Hygiene* 64 (1, 2) (2001): 6-7. <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt15-7.htm>



Taiwan's public health system structure consists of two levels. At the central level is the Department of Health which reports directly to the Executive Yuan. The second, local level consists of health departments in Taiwan's two special municipalities - Taipei and Kaohsiung - as well as health bureaus based in twenty-three county and city governments. Under the authority of the Executive Yuan, the DoH develops health care policies, declares and cancels epidemic alerts, gives orders for both household and port quarantines, and supervises, commands, guides and assesses local level policy implementation. The local level is responsible for developing implementation plans for DoH policies.¹⁶

Taiwan's emphasis on preventive care was central to its early public health successes. However, the situation began to change in the 1980s as government priorities shifted to rapid economic growth and profitability. In health care, the emphasis on privatization resulted in approximately 85 percent of Taiwan's hospitals (1999) and 65 percent of all hospital beds (2000), becoming privately owned.¹⁷ Because preventive care proved unprofitable, newly privatized treatment facilities shifted their focus to curative care. Even government infectious disease departments shrank.¹⁸ Only 3.3 percent of the DoH NT\$500 billion budget for 2000 was allocated for disease prevention, public health services and public health education.¹⁹ As a result, Taiwan's infectious disease response capacity deteriorated.

At the heart of Taiwan's infectious disease control system is the Communicable Disease Control Act.²⁰ This Act provides the legal basis for Taiwan's responses to any infectious disease outbreaks, including SARS. Article 3 of the Act designates five categories of communicable diseases and the corresponding severity-based responses. Category 1 includes Cholera, Plague, Yellow Fever, Rabies, Ebola, Anthrax and, with post-SARS revisions, SARS. Category 2 includes Typhus Fever, Diphtheria, Meningococcal

¹⁶ 2004 Taiwan Public Health Report. *Department of Health, Taiwan, R.O.C.* As of 2004, there are twenty-three health bureaus managing 369 health stations and 497 health rooms. Health stations manage the grassroots level of public health and are found in rural and urban townships. Health rooms provide basic medical care and public health services in remote areas.

<http://www.doh.gov.tw/ufile/Doc/Taiwan%20Public%20Health%20Report%202004.pdf> <accessed August 5, 2007>. In 1989 the DOH established the National Quarantine Service, a consolidation of 7 quarantine stations and two substations.

¹⁷ Tsung-Mei Cheng, "Taiwan's New National Health Insurance Program: Genesis And Experience So Far," *Health Affairs* 22(3) (2003): 61.

¹⁸ Government Information Office, Republic of China (Taiwan) *Taiwan Yearbook 2002, Public Health*. <http://www.gio.gov.tw/taiwan-website/5-gp/yearbook/2002/chpt15-7.htm#25>

¹⁹ Sue-feng Teng, "Rebuilding the Missing Link." NT\$500 billion is equal to about US\$ 15 million and NT\$ 18.2 billion, about US \$5.5 million.

²⁰ <http://www.cdc.gov.tw/ct.asp?xItem=21974&ctNode=2077&mp=5> (accessed 27 March 2009).



Meningitis, Typhoid, Hepatitis A and others. Category 3 includes Tuberculosis, Leprosy, Rubella, Pertussis, Hepatitis B and C, and Scarlet Fever. Category 4 includes known communicable diseases and syndromes that do not appear in the first three categories, but that the government deems should be controlled. Category 5 is an ad-hoc classification for emerging infectious diseases so that government and health authorities can legally implement control measures as needed until further scientific investigation allows for permanent reclassification.²¹

In 2001, Taiwan established a communicable disease surveillance network of doctors who report weekly on incidences of infectious diseases. This information is published monthly in the Epidemiology Bulletin. In addition, recognizing that quarantine and isolation are widely viewed as the first line of defense against infectious disease spread, Taiwan established six regional disease surveillance centers and quarantine stations.²²

Taiwan's SARS Response

In accordance with the Communicable Disease Control Act, during an infectious disease outbreak, the Department of Health (the Central Competent Authority) must establish a central epidemic control center to enable cooperation and resource sharing between private, public, medical, administrative and academic sectors (Art. 17). Local level governments may establish epidemic command centers and mobile disease control teams that are subordinate to the central epidemic control center (Art. 14-16).

On 17 March 2003, the Executive Yuan ordered the DoH to establish the SARS Coordination Center and on 28 April, the SARS Prevention and Relief Committee. The CDC organized a SARS Advisory Committee, consisting of infectious disease specialists, respiratory specialists and epidemiologists. This committee met daily to review recent SARS cases, focusing on hospital reports, patient travel and contact history and chest X-

²¹ SARS was first designated as Category 4. *Communicable Disease Control Act (2004)*. <http://www.cdc.gov.tw/en/> (under Acts and Regulations) <Accessed 10 May 2006>. Mark A. Rothstein et. al. *Quarantine and Isolation: Lessons Learned from SARS*, Report prepared for the CDC (November 2003): 100.

²² "Quarantine and Isolation," p. 100. *The six were eventually to be consolidated into 4 regional centers*. For example, Centers for Disease Control, "Flu Pandemic Mitigation - Quarantine and Isolation," http://www.globalsecurity.org/security/ops/hsc-scen-3_flu-pandemic-quarantine.htm <accessed, 30 November 2007>. P H Chau and P S F Yip, "Monitoring the severe acute respiratory syndrome epidemic and assessing effectiveness of interventions in Hong Kong Special Administrative Region," *Journal of Epidemiology and Community Health* 57 (2003): 766-769. <accessed, 30 November 2007>.



rays, in order to classify individuals as either probable or suspect SARS cases.

Various regulations and guidelines were developed or revised during spring and summer 2003 to enhance the public health response to SARS. The most important of the new regulations was the Provisional Act Governing the Control and Relief of Severe Acute Respiratory Syndrome (SARS) passed by the Executive Yuan on 2 May 2003 (19 articles). This act contains many of the same regulations as the Communicable Disease Act (amended to include 77 articles), but with specifications to confront the unique challenges posed by SARS.²³

The Provisional Act, like the Communicable Disease Control Act, confers immense power on the Department of Health of the Executive Yuan at the central level; the municipal governments at the municipality level; and the county (city) governments at the county (city) level - described as “competent authorities” (article 2, Communicable Disease Control Act). Under the Communicable Disease Control Act competent authorities have the authority to prohibit any group activities such as school attendance, business meetings and banquets, and can restrict transportation and access to specified locations (article 37). Articles five and eight of the Provisional Act confer on competent authorities the power to require suspected SARS patients to undergo prescribed treatment and prevention measures – if necessary, using coercive means. Article 7 of the Provisional Act empowers competent authorities to requisition from the private and public sector land, buildings, medical equipment, waste disposal facilities, vehicles, aircraft and more generally, any materials the DOH deems necessary for epidemic control. The Provisional Act also confers to all competent authorities the power to utilize mass media and communications facilities to collect and report information relating to the epidemic and to emergency care initiatives (article 11). Finally, schools, associations, and public and private organizations must grant official leave to anyone placed under mandatory quarantine or isolation (article 8). Additional relevant Taiwanese public health laws arising from the Communicable Disease Control Act include the Law on Control of Communicable Diseases and the Regulations Governing Quarantine. These both strengthen and add specificity to the Communicable Disease Control Act in their respective spheres.

²³ These included: “Communicable Disease Control Rewarding Guidelines,” “Communicable Disease Isolation Hospital Regulations,” “Implementation Regulations of the Surveillance and Early Warning System for Communicable Diseases,” “The Detailed Implementation of the Law on the Control of Communicable Diseases,” “Regulations Governing Quarantine,” and, “Provisional Regulations Governing the Prevention and Relief of SARS.” All temporary regulations established during the SARS outbreak expired 31 December 2003; unless permanently amended into law.



The DoH established two quarantine categories.²⁴ Category A quarantines related to people infected in Taiwan. Category A quarantines took place in the person's home, unless he/she was a health care worker or hospital patient exposed to a SARS patient.²⁵ People under category A quarantine were initially required to remain under quarantine for 10-14 days, and could only leave their quarantine site with the permission of health officials. 50,319 people were quarantined under this category. Category B quarantines were for travelers from regions designated by the WHO as SARS affected. People quarantined under category B were confined to their homes, to a designated airport hotel, or to a designated quarantine center. If they agreed to don a surgical mask, individuals subject to category B quarantine were permitted to exit quarantine for exercise, shopping, meals and other tasks approved by health authorities. 80,813 people were quarantined under this category. In total, 131,132 people were quarantined during Taiwan's SARS outbreak. All quarantined people were required to check and record their temperatures two to three times a day.

Incentives to comply with quarantine and isolation requirements included a NT\$5,000 reward for people adhering to their quarantine requirements for the designated period. In addition, people under quarantine were provided social services such as psychological support and child care through the local governments.

Incentives for those caring for SARS patients included a CDC-funded \$NT10,000/day "danger pay" bonus for physicians and a \$NT3,000/eight hour shift bonus for nurses. Any medical personnel infected with SARS were further compensated. For example, the state committed to providing full tuition through college to any child whose parent died while treating SARS patients. The state also committed to support any family whose livelihood was threatened by the mandatory isolation of its main breadwinner.

As SARS infections spread, the Taiwan government invested additional resources in

²⁴ "Use of Quarantine to Prevent Transmission of Severe Acute Respiratory Syndrome – Taiwan, 2003," *Morbidity and Mortality Weekly Report*. 52(29) (25 July 2003). "Quarantine and Isolation," p. 102.

²⁵ The 8 possible types in Category A include:

1. Health care workers who were not wearing PPE (personal protection equipment) when evaluating and/or treating a SARS patient;
2. Family members who provided care for a SARS patient;
3. People who worked in the same office and whose cubicles or work stations were located within 3 meters of a SARS patient's work area;
4. Friends of a SARS patient, as deemed appropriate by local health authorities;
5. Classmates or teachers of a SARS patient who attended a class for ≥ 1 hour with the patient;
6. People who sat in the same or adjacent three rows from a SARS patient on an airplane flight;
7. Passengers and drivers of public transportation who traveled ≥ 1 hour in the same bus or train cabin with a SARS patient; and
8. People who had contact with a person under quarantine who received care in a medical facility in which a SARS cluster occurred.



the infection control system. This involved the DoH adding an “infection control strengthening surcharge” to the national budget.²⁶

From 28 April, the Taiwan government also enacted a two-week ban on visas for travelers from regions designated by the WHO as SARS affected.²⁷ Following expiry of the two week travel ban, travelers from SARS affected regions were required to don surgical masks prior to departing for Taiwan. Any passenger failing to abide by this regulation was barred entry. Upon arrival in Taiwan, passengers from SARS affected regions were required to comply with a compulsory ten day quarantine. After reporting to local health authorities, Taiwanese citizens could choose to undergo quarantine in their own homes or in a designated airport transit hotel. Foreigners were required to undergo quarantine at designated hotels.²⁸

The Ministry of the Interior is responsible for national entry and exit control measures in addition to quarantine management. Local police, volunteers and health care workers enforced and supervised quarantined individuals. These responsibilities included daily visits or telephone calls to gather information and update the DoH web database on a twice-daily basis, as well as monitoring the whereabouts of quarantined individuals if outside designated quarantine areas, and ensuring that all people held in quarantine received timely food delivery.

On 20 May, the DoH specified twelve hospitals that would be dedicated SARS hospitals. Although no regulations were developed regarding admission policies for fever patients, the DoH did establish approximately one hundred fever clinics to screen potential SARS patients and minimize transmission into emergency departments.²⁹

Public education became a critical aspect of the government’s efforts to control SARS through voluntary, rather than compulsory prevention and control measures. During the second stage of the epidemic, the Department of Health held daily press conferences on infection control and prevention and produced a daily SARS prevention TV program to announce government measures and policies aimed at countering the epidemic. The DoH made additional information available through its website and in pamphlets at convenience stores and gas stations. Finally, the DoH developed a temperature

²⁶ Approximately US\$1.5 billion. Provisional Act Governing the Control and Relief of Severe Acute Respiratory Syndrome (SARS) (2005). Within thirty days of promulgating the Act on 3 May 2003, the DoH allocated NT\$50 billion.

²⁷ “Measures implemented to Control SARS (2003/4/30)” *Center for Disease Control, Department of Health, Taiwan, R.O.C.* <http://203.65.72.83/En/dpc/ShowPublication.ASP?RecNo=876>

²⁸ Mark A. Rothstein et al, “Quarantine and Isolation Lessons Learned from SARS,” p. 101. This falls under a Category B quarantine.

²⁹ “Severe Acute Respiratory Syndrome - Taiwan, 2003,” p. 463. While many of the fever clinics were adjacent to hospitals (in hospital parking lots for example) others were established separately.



monitoring campaign, and advertised on television, in posters, fliers, radio, the internet, magazines and newspapers, to provide the public with access to updated SARS information. These initiatives were supplemented with fever hotlines managed by local medical associations.³⁰ The goal was to combat growing public panic resulting from often sensationalized media reports on the dangers and spread of SARS.

Comparing Infectious Disease responses in Taiwan and China

Similarities between Taiwan and China make these two political entities useful when comparing causes for the relative success of epidemic prevention and control. Both early on invested heavily in state driven disease prevention policies resulting in unusually healthy populations.³¹ In terms of infectious disease control, both China and Taiwan followed a similar path by providing effective health care focused on prevention. The result for both included plummeting mortality rates and rapidly improving quality of life indicators. Their success is illustrated by the fact that both underwent the epidemiological transition – with chronic diseases replacing infectious diseases as the main cause of death. In addition, both countries moved in the 1980s from a health care system focused on preventive care, to one focused on curative care. Both systems saw the state withdraw from health care provision with the private sector expected to pick up the slack.

However, there are also a number of notable differences. In terms of political systems, these two entities differ dramatically. China is a one-party soft-authoritarian Leninist regime, whereas Taiwan is a vibrant multi-party democracy.³² The WHO is among many health organizations that have praised the Taiwanese National Health Insurance program (established in 1995), describing it as effectively and efficiently providing all Taiwan's people with health care. Indeed, in 2000, *The Economist* listed Taiwan as the second healthiest country in its "World Healthy Nations" list. A 2008 study by Huang, Wang and Chen found that Taiwan's health care system compares favorably with OECD country

³⁰ S. Cornelia Kaydos-Daniels et. al., "Body temperature Monitoring and SARS Fever Hotline, Taiwan," *Emerging Infectious Diseases*. 10(2) (February 2004) 373. <http://www.cdc.gov/eid>. Throughout Taiwan, each local medical association responsible for operating the fever hotline in its city or county provided daily reports to the Bureau of National Health Insurance. For example, the Taipei Medical Association staffed the hotline and 52 physicians worked 6-hour shifts between 8:00 a.m. and 10:00 p.m. daily. All certified physicians who practice in Taipei city are required to become members of the Taipei Medical Association.

³¹ Unusual relative to other countries at the equivalent development "stage".

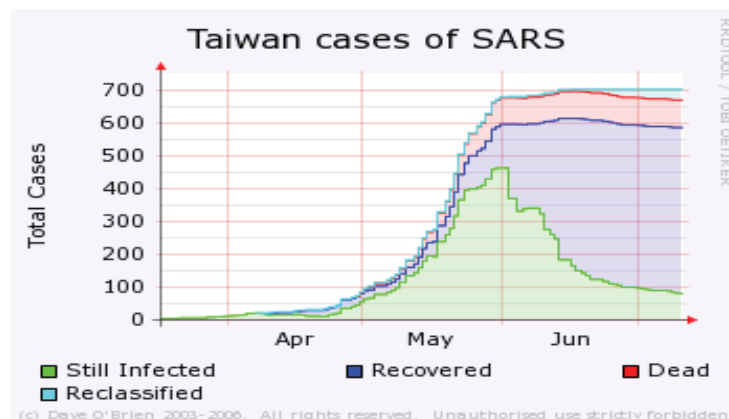
³² Freedom house defines Taiwan as "free" and China as "not free" – based on measures of political and civil freedom. <http://www.freedomhouse.org/template.cfm?page=363&year=2008>



health care systems in terms of health and efficiency indicators.³³ By contrast, by the time of the SARS outbreak, China's once much vaunted and praised public health system was being described as worse even than those in parts of Africa.³⁴

In addition, Taiwan is an island, and is therefore relatively easily isolated from the outside. By contrast, China has long, often porous land borders. Unlike China's massive 1.3 billion person population, Taiwan's population is relatively small (23 million). Taiwan is a developed country with advanced medical facilities and well trained physicians. China too has many advanced medical facilities and well trained physicians, however these are heavily concentrated in the major cities. Finally, Taiwan enjoyed the luxury of time. The SARS epidemic arrived in Taiwan well after appearing in China.

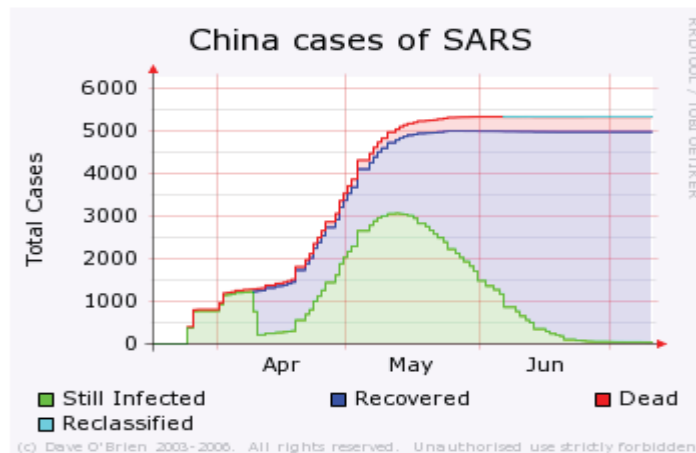
The relative Chinese success is illustrated by the SARS epidemic curves for Taiwan and China.



The epidemic curves (the bottom line in the graphs) illustrate the lifecycle of the epidemic. Excluding the large spikes in late March and early April- which indicate the days that the Chinese government stopped trying to conceal SARS- incidence of the disease in China follow a standard shaped epidemic curve. The curve illustrates initial

³³ Hung-chi Huang, Cheng-hua Wang, Pi-ching Chen, "Health care efficiency in Taiwan – compare with OECD countries," paper presented at the 6th AIMS International Conference on Management (28-30 December, 2008). 210.70.167.26/dr_bonus/adminpage/paperfile/20090106135637.doc (accessed 17 March 2009).

³⁴ WHO – "Diseases have no boundaries – Public health systems and disease prevention." <http://english.gov.tw/WHO/index> <accessed May 11 2006>. Henk Bekedam, WHO country representative for China (Interview, 31 May 2005).



difficulties with prevention and control followed by an eventual effective response. By contrast, the epidemic curve in Taiwan follows an abnormal epidemic curve, illustrating an ineffective response. The curve displays Taiwan's initial success with five weeks of control followed by a steady increase of SARS incidence in mid to late April, finally coming under control in mid-June. Thus, despite the clear advantages enjoyed by Taiwan, it was China's response to SARS that proved relatively successful. What explains this outcome?

Crisis and Response Capabilities

The crisis literature distinguishes between routine crises and novel crises. In routine crises (frequently recurring crises such as fires and floods), political leaders may defer to operational commanders – people such as firefighters or police officers - who have dealt with similar crises in the past. These operational commanders have trained for, and perhaps experienced similar crises and are able to respond effectively with only moderate adaptation of existing crisis response procedures.³⁵

However, this approach cannot be followed in the case of novel crises. Novel crises are crises where there is little past experience to draw on. Such crises include massive events such as hurricane Katrina, the 2004 Indian Ocean Tsunami or the 9/11 attacks on the

³⁵ Herman Leonard and Arnold Howitt, "Against Desperate Peril: High Performance in Emergency Preparation and Response," in Deborah E. Gibbons (ed) *Communicable Crises: Prevention, Management and Resolution in an Era of Globalization* (Information Age, 2007).



United States that explode on the scene, or more insidious crises such as the spread of a previously unknown infectious disease that only slowly makes itself evident. Of the two types of novel crises the insidious type is often far more dangerous. The danger lies in the likelihood that the leadership will fail to recognize the insidious crisis as a crisis because it develops only slowly and seems amenable to existing response strategies. As a result, the leadership may become aware of the crisis only after it has become widespread or more threatening. Thus, SARS at first went unrecognized and only slowly did the leadership come to realize the immensity of the threat it represented.³⁶

Both forms of novel crises require flexible leadership and response capabilities. The leadership must quickly identify the challenge, engage relevant bureaucracies, identify and implement a response, communicate the nature of the crisis and response effectively and clearly to the public, and control the message as it is being broadcast by the media to the public. These already extremely challenging tasks must be accomplished in a compressed timeframe under highly stressful condition. Leaders facing novel crises may prefer to deny their existence, or while recognizing the crisis, fail to effectively rise to the occasion. Indeed, governments are rarely prepared to recognize crises (in particularly those of an insidious nature), gather information and develop appropriate responses, or communicate effectively to the public and relevant organizations.

Some authors argue that an already challenging situation for leaders is made even more so if they are functioning in a democratic system.³⁷ In democracies, major emergencies require involvement by multiple jurisdictions and many levels of representative government. Coordinating among these often overlapping and contentious jurisdictions can be difficult. Politicians must identify and justify priorities to local leaders, the public and the mass media.

These challenges are less significant in authoritarian regimes. Authoritarian leaders are less likely to need to negotiate with bureaucracies over jurisdictional powers or struggle to disentangle overlapping institutions. Furthermore, the media and by extension the message to the public are more easily controlled.

In previous collaborative research we found that a number of factors were key to China's effective SARS response.³⁸ Three of these factors can be tied to the advantages of an authoritarian system of government. The fourth factor is tied to the distinction

³⁶ Erwan Lagadec, "A survey of unconventional crises" in Erwan Lagadec (ed.) *Unconventional Crises, Unconventional Responses* (Center for Transatlantic Relations, 2007).

³⁷ Leonard and Howitt, "Against desperate peril..."; Arjen Boin, Paul 't Hart, Eric Stern, and Bengt Sundelius, *The Politics of Crisis Management: Public leadership under pressure* (Cambridge 2007): 8.

³⁸ Jonathan Schwartz and R. Gregory Evans, "Causes of effective policy implementation: China's public health response to SARS," *Journal of Contemporary China* 16(51) (May 2007): 195-213.



between the international status of China and Taiwan. One key factor was the ability of the Chinese central government to recentralize power when faced with a crisis. The central government was able to reverse decades of decentralization and draw to itself the power to develop and enforce strong public health policies. A second key factor was that, once the gravity of the SARS epidemic became clear to the higher echelons of government, China's leadership was able to regain public support and trust by taking rapid and highly publicized action. This included mobilizing the population, both in terms of traditional civil society organizations and in terms of quasi-state organizations in the form of neighborhood and village committees. Third, the Chinese government was able to ensure that the mass media inform the public about SARS in a non-sensational manner – producing a unified and clear message that supported government priorities. Finally, China was able to draw on international support. In the following section I draw on these four factors to compare China's response to SARS with that of Taiwan.

Centralized control of SARS-related decision making

During the SARS outbreak in China, the central government established clear lines of control from the central level to the lowest, township, level. While local governments occasionally disregarded central government decisions, by in large, the center was able to control policy implementation. Thus, local health officials were required to provide daily reports up a clear chain of command to the center. These reports were made available online. When the newly established (2001) Chinese CDC proved insufficiently effective in responding to SARS, the central government transferred responsibility for SARS to the Ministry of Health. In an unusual step for the PRC, the minister of health was replaced with a vice-premier (Wu Yi). Wu Yi's high rank and status in the Party/state lent tremendous prestige and power to the Ministry of Health, signaling the seriousness with which the center took the outbreak.

By contrast, Taiwan's Provisional Act did not include explicit delineations of power and responsibilities. As the incidences of SARS rapidly increased after 10 May 2003, the overwhelmed SARS Prevention and Relief Committee could no longer review all potential SARS cases in a timely fashion with official SARS classifications taking over twelve days (during which patients were often placed in general hospital rooms). Recognizing that this was too slow, the CDC began cooperating with the Bureau of National Health Insurance regional offices in north, south and central Taiwan. These regional offices took over case review responsibilities and established a far more efficient set of local SARS expert committees. However, these multiple SARS committees lacked clear bureaucratic



lines of control. As a result, communication between central and local SARS epidemic control centers was poor, with the failure to establish a central coordination and control mechanism contributing to the confusion.³⁹ Essentially working independently, local governments improvised responses to the increasing number of SARS patients.

Taiwan CDC authorities did not begin advising local healthcare workers about SARS transmission or infection control until the second stage of the Taiwan outbreak – with the chain of April-May 2003 nosocomial (hospital related) infections catapulting Taiwan from a WHO classification of limited transmission to the 3rd largest SARS outbreak in the world. Nosocomial infection control mechanisms and a requirement for all healthcare workers to wear masks were not implemented until 26 April. The DOH requested that health officials strengthen infection control auditing in hospitals on 14 May as no guidelines for hospital infection control existed. Only on 23 May did the central SARS Contingency Committee finally pass a resolution to implement guidelines on SARS patient assessment.

A key additional constraint on cooperation and coordination among authorities in Taiwan was the large number of units involved in all decisions, and political maneuvering within and among levels of government. At the central level, coordination was required among departments and sub-departments of the Executive Yuan, the Labor Affairs Council, the Mainland Affairs Council, the Civil Aeronautics Administration, the Ministry of Transportation, the Ministry of Communications and the Government Information office.⁴⁰ This required strong guidance from the central government, something that was not forthcoming. Indeed numerous spokespersons represented the various branches of government, failing to provide a unified message. Among levels of government a key relationship was between the central and Taipei governments. Taipei was the main outbreak center in the country, and was controlled by the KMT party, whereas the central government was controlled by the rival DPP. These governments struggled to work together because of the adversarial relationship between the Taiwan president (DPP) and the Taipei mayor (KMT).

As a component of its SARS response, China developed detailed hospitalization procedures that were widely implemented. These required that any person arriving at a

³⁹ Keith Bradsher, “As SARS Ebbs, WHO Lifts Its Advisory on Taiwan.” Before 9 May, the relevant medical records (including any available laboratory test results) of all reported SARS patients were reviewed by a central SARS Advisory Committee of the Taiwan Center for Disease Control. However, the rapid increase in reported SARS cases overwhelmed the SARS Advisory Committee. As a result, after 10 May, 3 regional offices of the Bureau of National Health Insurance took responsibility for case reviews by local SARS expert committees. Ying-Hen Hsieh, et. al. “Quarantine for SARS, Taiwan,” *Emerging Infectious Diseases* (Feb. 2005).

⁴⁰ *Quarantine and Isolation...*, pg. 104.



hospital be checked for fever prior to entering the hospital grounds. If the person is found to have fever or other SARS-like symptoms, he or she would be placed in a ward isolated from the hospital itself.⁴¹

In Taiwan, hospitals lacked standard procedures for admitting fever patients. Panicked patients with fever and minor illnesses swamped many hospitals. Overall, hospital facilities (including isolation and negative pressure rooms) proved insufficient to absorb the flood of potential SARS patients. Consequently, while awaiting proper treatment and isolation, undiagnosed SARS patients often remained in crowded wards or emergency departments for days, exposing hundreds of people to SARS. This scenario recurred in numerous hospitals, including the flagship Hoping Hospital and National Taiwan University Hospital.

In response to the failure of Taiwanese hospitals to control the in-hospital spread of SARS, in Spring 2003 nine major hospital centers were fully or partially closed. Taiwan University Hospital superintendent, Dr. Chen Ming-Feng blamed the Taiwan CDC and DoH for his hospital's poor response. Among the leading hospital centers in Taiwan, Taiwan University hospital was so overcrowded it was forced to turn away new patients or transfer existing patients to other hospitals. However, reflecting the chaos in the health system, these other hospitals often refused to accept the transferred patients.

In addition, Taiwan hospitals receive funding from the state based on the number of patients seen. In order to minimize financial losses that would result from a rush to depart the hospital by patients in fear of contracting SARS, many hospitals sought to avoid reporting probable SARS patients within their facilities. Clearly, in comparison with China, Taiwan suffered from a poor organizational response at the bureaucratic level.

In China, designated SARS physicians and nurses were on 24 hour duty and were not permitted to leave their places of work for up to three months. All their needs were brought to the hospital itself, with the result that they were cut off from family and friends for the entire period. Described as a "critical moment for the future of the country" some doctors explained their willingness to sacrifice personal and family needs to the greater good as a result of the Chinese education system. Very few health care providers refused to serve. Those who did refuse were fired from their positions. Strengthening health care worker resolve were official, televised ceremonies describing the heroic efforts they were making and thanking them for their work.

Contrasting this situation was the chaos that defined Taiwan hospitals as the second stage of the SARS epidemic developed. The elite Hoping Hospital where the second SARS phase originated was closed on 23 April 2003. Anyone who had been in Hoping Hospital

⁴¹ Interview with staff surgeon, Shaanxi Provincial People's Hospital (June 2, 2005).



after 9 April was placed under home quarantine. Anyone in the hospital when it was closed, including patients, visitors, doctors and other staff members, was quarantined within the hospital for two weeks. Police were sent in to enforce this quarantine, however, after only one day, several health care workers and staff members broke quarantine, escaping by jumping out windows and climbing fences. Lacking faith in the public health system, scores of doctors and nurses resigned during the epidemic, including 160 in a single week.⁴² Furthermore, despite efforts by Taiwan authorities to contain SARS through strong measures, the government encountered numerous incidents of disobedience and resistance. For example, medical staff at Hopping hospital conducted vocal protests, crossed police lines and generally refused to adhere to government regulations.

With over 130,000 Taiwanese under home quarantine during the SARS epidemic, quarantine enforcement proved quite problematic. For example, after two people suspected of being infected with SARS were found in the Huachang Public Housing Complex, all of the project residents were placed under home quarantine. However, over 200 residents “disappeared” and had to be asked to return home to register at the command control center. During the epidemic, hundreds of people violated quarantine orders. Violators faced home video surveillance, fines of NT\$60,000 – NT\$300,000, or up to two years imprisonment. However, of the many violators, only 286 (0.2 percent) were punished. Thus, where Chinese health workers remained at work and individuals placed under quarantine largely adhered to their quarantine orders, the same could not be said of their Taiwanese counterparts. In Taiwan, hospital workers and people placed under quarantine were willing to ignore and defy state regulations they viewed as endangering themselves.

Public Support

Taiwan’s leadership failed to successfully engage and mobilize civil society and hesitated to act strongly against the SARS outbreak for fear of alienating the voting population. Officials feared that unpopular restrictions on personal movement and economic activity might turn the public against the ruling party.

The public, driven by often sensationalist reports in the mass media, were openly skeptical of government statements and acted to block or simply ignore central government initiatives. For example, despite ongoing central government assurances, when the public in Hsinchu County learned of plans to move SARS patients to their local

⁴² “The Making and Unmaking of Civic Solidarity...” p. 135. Donald G. McNeil Jr., “SARS Fears Shake Taiwan Medical Staff” *The New York Times*. 21 May 2003 <http://www.nytimes.com>



hospital from hospitals in Taipei, numerous people, led by local government officials, rallied to block the transfer. Similar incidents across the island left Taiwan “divided into many small fortresses...”⁴³

While acknowledging the importance of the procedures and regulations established by the Chinese CDC and Ministry of Health, and the ability to enforce action, public health officials, doctors and CDC officials interviewed all noted the central role played by non-governmental personnel in ensuring that SARS cases were quickly identified and controlled. The Chinese government showed no hesitation in mobilizing the public. While its ability to recentralize decision making power, rapidly enact rules and regulations including clearly coercive and civil liberties-limiting policies, were a central component of China’s SARS response, these actions were accompanied by reliance on a traditional communist tool - the mobilization campaign. Mobilization campaigns were historically utilized by the Communist party to engage large sectors of the Chinese population in achieving specific targets or goals.⁴⁴ Mobilization prove a highly effective disease prevention and control tool for China.

Interviewees invariably identified SARS as a political problem requiring political mobilization. The key to effective mobilization was the village and neighborhood committees, under the guidance and with the training of local CDCs and hospitals. During the SARS outbreak, trained and guided by local hospitals and public health offices (known as CDCs), these committees took responsibility for identifying potential SARS cases, monitoring their communities, and notifying hospitals of potential SARS cases. Because the committees are constituted of community members, the committees knew most of the people under their watch and were able to keep close tabs on comings and goings.⁴⁵ If a person had recently returned from a SARS affected region of the country, this information would soon be obtained by the committee members and passed on to relevant officials.⁴⁶

⁴³ “The Making and Unmaking of Civic Solidarity...,” pp. 136-137.

⁴⁴ For example, 1950s mass “patriotic health campaigns” that were aimed at improving environmental sanitation and hygiene while also attacking specific diseases. One of the best examples of this approach was the campaign against the “four pests”- rats, sparrows, flies, and mosquitoes- and on schistosomiasis-infected snails.

⁴⁵ Jonathan Schwartz and R Gregory Evans, “Causes of effective policy implementation: China’s public health response to SARS,” *Journal of Contemporary China* vol. 16(51) (May 2007): 211.

⁴⁶ While acknowledging the effectiveness of the mobilization campaigns and centralization of coercive powers in general, many interviewees viewed this model as a throwback to a Maoist era that was rapidly fading. They were uncomfortable with the government’s actions and viewed them as eventually becoming impossible.



Mass Media

Since the late 1980s Taiwan's media have become increasingly independent and active. However, because the mass media market in Taiwan is extremely competitive, many media outlets depend on sensationalist journalism to capture market share. Drawing on this point, Ku and Wang argue that Taiwan's media were crucial to creating an atmosphere of mass hysteria about SARS.⁴⁷ Rumors and hearsay were repeated throughout the day during the early part of the second stage of the Taiwan outbreak. Panicking frontline health workers demanding to be released from treating SARS patients were given prominent media attention, thereby increasing public panic and demoralization, as well as distrust of state initiatives and reassurances.

By contrast, in mainland China the mass media are essentially controlled by the state. While there is room for some criticism of the state in normal times, during the SARS crisis the state controlled information releases and ensured a unified, informative and reassuring message. In response to the SARS epidemic, the central government first clamped down on any reporting, denying the public access to information on SARS developments. However, as the epidemic spread, this approach was replaced in April 2003 by mass media saturation with information about SARS and how to identify symptoms of the disease.⁴⁸ The unusually open discussion of the SARS epidemic in the media began with public statements by Premier Wen Jiabao calling the situation grave. Furthermore, in an effort to illustrate their engagement with, and commitment to society's welfare, President Hu Jintao and Premier Wen Jiabao initiated a travel and media blitz to rally the country in the fight against SARS, describing the disease as requiring "prompt and resolute" measures.⁴⁹ China's media outlets, both print and electronic, provided daily statistics on the disease as well as descriptions of government and grassroots efforts to contain the disease. While focusing on keeping the public informed on the disease and its prevention, the media also sought to convey the message that the disease was surmountable.

⁴⁷ "The Making and Unmaking of Civic Solidarity..." p. 135.

⁴⁸ Initial news of the China outbreak was spread by text messages among friends and family members across the country, reflecting a new challenge to state control over information.

⁴⁹ Yulin Ruan, "Can China's Public Health System Cope with SARS?" *Zhong Guo Xinwen She* (8 June 2003).



International Support

In 1972, the Republic of China (on Taiwan) was replaced by the People's Republic of China as representing China at the World Health Organization. From that point forward, WHO officials ceased visits and direct interaction with Taiwanese officials. Viewed by the WHO as a province of the People's Republic of China, Taiwan was expected to obtain information and aid from the WHO through the PRC. Since the People's Republic of China was admitted to the UN in 1972 Taiwan's health officials and medical professionals have been excluded from the WHO, its forums and workshops on important issues ranging from diagnosis, monitoring and controlling newly emerging infectious diseases. For example, as a non-member, Taiwan does not have access to information such as pandemic surveillance, risk assessment and early warning information that is provided by the Pandemic Influenza Program Intergovernmental Meeting – a WHO service available only to member states. Furthermore, it is blocked from access to virus samples and equipment stockpiles. Complaining that the PRC has intentionally blocked Taiwan attempts to obtain pandemic-related information, since 1976 Taiwan has sought to obtain observer status at the WHO, but its application has been blocked each time by Beijing.⁵⁰

While on 3 May 2003, during the SARS outbreak, the PRC permitted two WHO investigators to visit Taiwan, they were banned from having any contact with Taiwan government officials. Taiwan officials note that during the SARS outbreak, China blocked cooperation and information sharing between the WHO and Taiwan. Taiwan health professionals seeking information from the WHO were told to request it from Beijing, a politically difficult option.⁵¹ Another option was to obtain data from the WHO website. However, according to Chen Yuan-Tsong – 2003 director of the institute of Bio-Medical Sciences at Academia Sinica – “by the time the information is in the public domain, it is probably out of date.”⁵²

However, acknowledging the challenges faced by Taiwan, the WHO did organize a 16 March 2003 visit by United States Centers for Disease Control officials who liaised with the island's government health officials. The US CDC team provided guidance and information on proper disease control protocols. Thus, information on disease control was transmitted to Taiwan via US intermediaries. However, the Taiwan government failed to convey the information to hospitals. Doctors and hospital administrators claimed that

⁵⁰ ROC Ministry of Foreign Affairs, *Why WHO Matters: Working Together for Health – Let Taiwan be WHO's Worthy Partner* (2004). http://who.mofa.gov.tw/why_cp3.asp (retrieved 16 March 2009).

⁵¹ David G. Brown, “China-Taiwan Relations: The Shadow of SARS,” *Comparative Connections* 5 (3 July 2003); Taiwan Ministry of Foreign Affairs, *Why WHO Matters* (2004) http://who.mofa.gov.tw/why_cp3.asp (retrieved 15 March 2009).

⁵² David Cyranoski, “Taiwan left isolated in fight against SARS,” *Nature* 422(6933)(17 April 2003): 652.



the majority of SARS-related information they received was obtained not from the US CDC via the Taiwan CDC and Ministry of Health, but rather from the WHO website. In addition, during the first stage of the SARS epidemic Taiwan chose to ignore general WHO recommendations and the practice in other countries of screening all visitors at national points of entry.

Clearly, direct WHO-Taiwan interaction would have been most beneficial to enhancing Taiwan's SARS prevention and control efforts. However, much of the necessary information was made available to the Taiwan government. The government failed to ensure the information was effectively transferred to those most needing it and chose not to adopt key WHO recommendations.

Contrasting the Taiwan situation, the WHO has permanent representation in China. During the initial phase of the outbreak, Chinese officials were reluctant to share information with international agencies and refused cooperation with the WHO. However, as the SARS outbreak spread and Chinese leaders concluded that China alone could not resolve the crisis, China began close collaboration with WHO officials. Collaboration included WHO experts working closely with Chinese Ministry of Health and CDC officials. For example, joint WHO-MoH teams visited hospitals where SARS cases were treated. WHO experts also traveled to regions of China where SARS cases appeared, and reviewed contact tracing and other control measures taken by the Chinese in response to the outbreak.

Discussion and Conclusions

A comparison of public health conditions in China and Taiwan at the outset of the SARS outbreak suggests that Taiwan was in a stronger initial position in terms of potential to successfully control SARS. In comparison with China, Taiwan is a wealthy country with a highly educated and healthy population, easily managed borders, and government legitimacy arising from the democratic nature of the political system. In addition, since the initial SARS outbreak was in China, Taiwan authorities had the opportunity to prepare a response to a potential spread to Taiwan.

China enjoyed none of the above advantages, and as the source of the original outbreak, China was completely unprepared for this new disease. Nonetheless, as the Chinese leadership became aware of the severity and potential threat represented by SARS,



they were able to respond more effectively than their Taiwan counterparts. With the disease spreading across China, the Chinese leadership re-centralized decision making power to the central government; enforced new and strict regulations on SARS treatment, control and reporting, and; mobilized the mass media, quasi-non state actors and the public as a whole, to achieve the goal of SARS control.

In Taiwan, political considerations constrained similar government actions. Inter-party rivalries limited communication and cooperation among jurisdictions. Fear of inducing a popular backlash at the polls caused the government to hesitate when considering coercive and unpopular disease control initiatives – even though these were recognized by epidemiologists as important and effective. The state was unable to control the flow of information to the public, and in important cases the public refused to believe state pronouncements or cooperate with state initiatives.

In evaluating its response to SARS, the Taiwan government attributed its failure to effectively overcome SARS to being barred from WHO membership. Is this a credible argument? While it is correct that having been expelled from the WHO, Taiwan lost the direct support of the WHO in responding to the SARS outbreak, additional factors clearly played an important role.

The main distinctions between the Chinese and Taiwanese responses to SARS were China's ability to engage and mobilize state and society and the coercive power the Chinese state was able and willing to bring to bear on health care workers and the public in general.

During repeated interviews with Chinese physicians involved in SARS response, an oft heard refrain was that the SARS outbreak was a political, rather than a public health challenge. Though they often also referred to discomfort with the sometimes overbearing nature of the state's response, these physicians, from the lowest – township – level to the highest - Ministry of Health - level identified strong and decisive action taken by the government as key to successful disease control. Contrasting China's experience, centralized, sometimes coercive actions did not distinguish the Taiwanese response to SARS.

As these two cases suggest, the key to successful epidemic outbreak control is the capacity of the central government to centralize power; gain the support of, and activate the public; harness the mass media, and; draw on international support. Differences on the first three of these can be understood as arising from clear differences in value orientations. Michael Bond notes that Confucian societies, both in China and abroad, exhibit similar behavior regarding the importance of hierarchy and relationships. Bond states that “it seems that [Confucian societies] prefer an authoritarian leadership style in



which a benevolent and respected leader is not only considerate of his followers, but is also able to take skilled and decisive action.”⁵³

However, despite Taiwan’s previously discussed similarities to China, residents of Taiwan exhibit real differences in terms of their relationships to hierarchy. These differences become clear in survey data collected as part of the SVS (Schwartz Values Survey). Drawing on survey data from 78 countries, the SVS distinguishes among six categories that reflect the values orientations of all countries included in the study. The orientations are paired with their polar opposites. Thus, Egalitarianism is paired with its polar opposite – Hierarchy; Harmony with Mastery, and; Embeddedness with Autonomy.⁵⁴ Of particular interest in terms of SARS response is a comparison of China and Taiwan on value orientations that reflect the relationship of the public with the government. Therefore, I focus on data from one pairing in particular –Egalitarianism and Hierarchy.

This value orientation pairing reflects how societies ensure that people behave in a responsible manner that preserves the social fabric rather than competing with each other in ways that might be destructive to society. Egalitarian cultures value recognizing people as moral equals who share basic interests as human beings. In these cultures, the goal is to socialize members to believe that they should commit to cooperate and feel concern for everyone’s welfare. In egalitarian cultures, societal expectations are that people will choose to act for the benefit of others. By contrast, Hierarchy cultures value hierarchy of roles as a means to ensure responsible, productive behavior. Such cultures view unequal power distribution, roles, and resources as legitimate and even desirable. In hierarchical cultures people take for granted a hierarchical distribution of roles, and comply with the obligations and rules attached to their roles, showing deference to superiors while expecting deference from subordinates.⁵⁵ In Hierarchical cultures there is an emphasis on helpfulness, social justice, honesty, responsibility, equality and loyalty. Characteristics attributed to Hierarchical cultures include an emphasis on humility, authority, wealth and social power.

In addition, Egalitarianism correlates positively with democracy as measured by

⁵³ Michael Bond and Kwang-Kuo Huang, “The Social Psychology of Chinese People,” in M. Bond (ed.) *The Psychology of the Chinese People* (NY: Oxford University press, 1984): 251.

⁵⁴ Shalom H. Schwartz, “A theory of cultural value orientations: explication and applications,” *Comparative Sociology* 5 (2006): 137-182.

⁵⁵ Shalom H. Schwartz, “A theory of cultural value orientations: explication and applications,” *Comparative Sociology* 5 (2006): 137-182.



Freedom House.⁵⁶ Essentially, a society in which people are encouraged to treat each other as equals and to make voluntary contributions to maintaining the social fabric is likely to be supportive of a democratic political system. By contrast, a society that expects its citizens to unquestioningly adhere to their set roles in a hierarchical system will logically oppose democratization.

Results from the SVS find that on Hierarchy, China scores well above the world mean. Indeed, China scores 2.6 standard deviations above the mean – the highest score among all countries surveyed. Taiwan scores low on Hierarchy relative to China, though still above the mean for the world (see Table 1).

Table 1. Value Orientations for Taiwan and China

Country/Value Orientation	Hierarchy	Egalitarianism
China	3.49	4.23
Taiwan	2.69	4.31
Mean	2.33	4.70
Standard Deviation	.45	.27

Unsurprisingly, China scores well below the mean on Egalitarianism – the polar opposite of Hierarchy. In fact, China’s score is second lowest of all countries surveyed. Taiwan too scores low on Egalitarianism, though to a far lesser extent than China. Of the two, Chinese society clearly exhibits a far stronger tendency towards accepting and even valuing hierarchy. As a result, it is not surprising that in the face of SARS, China’s population was more amenable to the State’s top-down, centralized decision making and dictates.

By contrast, Taiwan’s more Egalitarian society was less willing to unquestioningly accept decisions that might require them to make sacrifices (financially and in terms of personal safety). This less compliant attitude was further aggravated by a combative media and a political system lacking unity, also components of a democratic system.

The seemingly obvious conclusion to draw is that effective infectious disease control depends on coercive government actions that would be deeply unpopular and therefore difficult to implement in a non-Hierarchical, democratic society. However, obstacles to

⁵⁶ Shalom H. Schwartz, “Cultural Value Orientations: Nature and Implications of National Differences,” 36-37.



taking strong, centralized and coercive actions do not necessarily doom democratic regimes to failure in the face of infectious disease outbreaks. Nor do they suggest that we should strive to foster a more Hierarchical value orientation among countries leaning towards Egalitarianism. Rather the priority must be to ensure that the state, when faced with a potentially serious infectious disease outbreak, has the option of implementing policies that may prove economically damaging and socially invasive. A democratic government may enhance the likelihood that such an option is available by building public trust through openness and clarity about the nature of the threat and the reason for the policies being proposed.

While this approach may be cumbersome and difficult by comparison to coercive methods, it offers a longer term solution to infectious disease control than one that relies heavily on coercion and mass mobilization. As noted, even in the Chinese response to SARS, many physicians and academics expressed discomfort with the coercive nature of the government response, even suggesting that the coercive approach would become increasingly difficult to implement in the future.

Given the importance of assuring a clear delineation of powers, it is essential that governments early on engage their populations in a debate over how to provide such powers within a democratic system. As the likelihood of a future global pandemic increases, so too does the importance of engaging in this debate. ■



Author's Biography

Jonathan Schwartz

State University of New York at New Paltz

Dr. Jonathan Schwartz is an associate professor of Department of Political Science and International Relations, State University of New York at New Paltz. He received the Ph.D of political science at University of Toronto, Canada in 2001. From 2007 to 2008, he has been a visiting Fulbright scholar in Department of International Relations, Xi'an International Studies University, China. He is actively participating in lots of conferences, seminars, and lectures regarding comparative politics and international relations, especially those themes of politics in Israel, Canada, and China, environmental protection, health problems, etc. His recent publications are as follows:

“Shifting Power Relations: State-NGO Relations in China,” in Andre Laliberte and Marc Lanteigne (eds.), *The Chinese Party-State at the Turn of the Millennium: Adapting to the Challenges of Maintaining Legitimacy* (RoutledgeCurzon Press). (Spring 2008).

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Forthcoming:

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- Young-Hwan Shin, the Executive Director of EAI Fellows Program
Tel. 82 2 2277 1683 (ext. 112) fellowships@eai.or.kr

