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Asian tigers and the Chinese dragon: Competition and collaboration between sentinels of pandemics from SARS to COVID-19

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SPOTLIGHT ISSUE

Histories of epidemics in the time of
COVID-19

GUEST EDITORS

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Abstract

This article compares the management of COVID-19 in different Asian states—China, Hong Kong, Singapore, Taiwan, South Korea, Japan, and Vietnam—after their reactions to the SARS crisis in 2003. It uses animal metaphors and the concept of sentinel territory to describe the way these states have prepared for the next pandemic crisis in a mix of competition and collaboration that produces solidarity.

KEYWORDS

China, collaboration, competition, COVID-19, SARS, sentinel

The global mobilization against COVID-19 has led to calls for solidarity in containing the disease, through a diplomacy of sharing masks, drugs, vaccines, and hospital beds. However, one of the lessons of the global crisis is that costly measures of containment can be avoided if costly signals of warning are sent early enough to stop the disease before it spreads. If there is competition between nation-states to “flatten the curve” through numbers of infected patients, at another level, there is a collaboration, though less vocal, between nation-states who have attempted to prepare for such pandemics through the detection of its early warning signals. This is particularly the case in the Asian territories that were affected by the 2002–2004 SARS-CoV outbreak.¹ Rather than examining the current rush for vaccines, antivirals, and masks used to treat the current pandemic and stockpiled for the next pandemic, or the exchange of knowledge to build scenarios and simulate models of future pandemics, this article will describe a third technique of preparedness: territories considered as sentinels, in which early warning signals of pandemics are detected so that a disease outbreak can be mitigated from the outset.²

Historians of the concept of preparedness have traced the invention of its techniques (sentinels, simulations, stockpiling) to the work of contingency planners at the beginning of the Cold War, who were mobilized to prepare the U.S. population for a nuclear attack. After the end of the Cold War, these were then extended to all hazards, including terrorist attacks, hurricanes, earthquakes, floods, and pandemics.³ In contrast with prevention, which relies

¹Chia et al. (2007); Enemark (2007); Peckham (2016).

²Doherty (2012); Blanchon, Keck, Le Tourneau, Tonnelat, & Zuniga-Teran (2020).

³Lakoff (2017).

on the use of statistics to mutualize risks on a shared territory, preparedness is used when risks cannot be calculated but the effects of a coming disaster must be imagined to be mitigated. As a technique of imagination, preparedness acts as if the disaster was already present and perceives its presence as actual by virtual devices. Since the 2005 publication of its International Health Regulations, the World Health Organization (WHO) has become the forum where techniques of preparedness are discussed in relation to pandemics.⁴

This article examines how Asian states have prepared for outbreaks of new respiratory diseases since 2003, under the regulation of WHO, by focusing on competition and collaboration through the concept of sentinel territories. Building on common memory of the 2002–2004 SARS crisis, it analyses the issue of solidarity among these polities. I use animal metaphors to capture the measures taken by Asian governments, their scientific experts, and civil society to mitigate the COVID-19 pandemic. These metaphors are commonly used by the media in Asia and in the rest of the world: the Chinese dragon as a metaphor for a silent reservoir of potentially dangerous mutations, the Asian tigers as a metaphor for quick reaction, and the Japanese fox and the Vietnamese wolf as metaphors for intelligence and strength in the management of pandemic threats. These metaphors have no connections to the real relations between humans and animals—bats, pangolins, dogs, cats, ferrets—involved in the management of the COVID-19 pandemic. Nor do they replicate racist insults used against the assumed proximity of the Chinese population with animals in “wet markets” in Wuhan. Instead, I use these metaphors to suggest that pandemic preparedness relies on virtues and competences that are neither strictly epistemic (attached to truth and objectivity) nor strictly moral (attached to the good government of a population or the respect of an environment), but that are in the end aesthetic (attached to a beautiful signal in a mix of competition and collaboration when living beings react to a threatening situation). I do not use these metaphors to make a literary interpretation of the semiotics of sentinels, but rather to suggest an ethological approach to warning signals. In the conclusion of this article, I will show that pandemic preparedness relies on aesthetic behaviours similar to those developed by animals when they compete and collaborate to mitigate threats from predators. An ethological approach of sentinel territories, captured through the use of animal metaphors, demonstrates that the solidarity between nation-states is embedded in the vital use of sentinel technologies that stem from previous experiences of epidemics and from long-term perceptions of their environments. Here, these animal metaphors are proposed as memory tools, but also as indicators of a philosophical problem that human societies solve differently when they are confronted with pandemic threats and that living beings have always faced when confronted with a stressful situation.

1 | THE DRAGON: MAINLAND CHINA

There is little doubt that the new SARS-CoV-2 virus originated in China, despite claims that it was introduced to the region by the U.S. army, and that its emergence was natural, despite the proximity between the market where the first cluster of atypical pneumonia was observed in Wuhan in December 2019 and the BSL-4 laboratory inaugurated by the Chinese Academy of Sciences in Wuhan in 2017.⁵ Since it is more difficult to design a new virus and release it successfully with a terrorist intention than to let nature produce viruses through mechanisms of mutation and selection, the official hypothesis that the SARS-CoV-2 virus was transmitted from bats to humans must be held true, based on its analogies with a similar virus found on bats in 2018. The role of pangolins, which have been widely consumed and increasingly protected in China in recent decades, as an intermediary animal remains to be proved.⁶

What is also clear is that early warning signals, which were sent by physicians in Wuhan after the discovery of the cluster of atypical pneumonia and the observation of analogies between this new coronavirus and the SARS

⁴Since the election of Margaret Chan as the head of WHO in 2006, China has played a major role in WHO's governance, as confirmed by the election of Tedros Adhanom Ghebreyesus in 2017, who supported the government of Xi Jinping during the COVID-19 crisis, in contrast to the critical stance of WHO against China during the SARS crisis. On the role of SARS in the politics of WHO, see Heymann & Rodier (2004).

⁵Chan et al. (2020).

⁶Coggins (2002).

virus, were not heard. Li Wenliang and other physicians were blamed for spreading “depressing news,” and the young ophthalmologist died from COVID-19 on February 7, 2020, raising an unprecedented wave of compassion and anger in Chinese social networks. The failure of Wuhan’s authorities to relay these alerts can be explained by the traditional fear of sending bad news to the emperor, but also by a special conjuncture: the meeting of the National People’s Congress was to be held in Beijing in May and prepared by the election of local representatives. On January 18, the Communist Party organized a banquet with 40,000 guests, who were invited to come, eat, and dance in Wuhan, despite their coughs and fever. The lockdown on January 21 of Wuhan and the Hubei province was made less efficient because of this banquet; many infections probably occurred during the banquet, and local representatives were able to flee the city of Wuhan in the 3 days before the lockdown. The failure of the early management of COVID-19 reveals not a lack of “democracy” in China, since elections probably contributed to spread the disease, but the lack of a public space in which whistleblowers can be heard.⁷

Another cause of the disease’s spread, probably bigger on a population scale but less significant politically, was the departure of migrant workers from Wuhan for Chinese New Year. As one of the industrial centres of China since the middle of the 19th century, Wuhan hosts 11 million inhabitants. It is estimated that 5 million migrant workers left Wuhan and the Hubei province in the days before the official lockdown. China’s dense network of high-speed trains has accelerated this massive flood of people. These migrant workers were put under quarantine by residents’ committees (*shequ*), which were introduced in the mid-1980s.⁸ As a major site for international joint ventures, Wuhan also hosts a significant number of foreign workers, who asked for repatriation in the last week of January and were put in quarantine when they arrived in their own countries.

On February 28, a joint mission between WHO and China published a report in which the measures taken in China to control COVID-19—rapid sequencing and testing, massive lockdown of whole areas, and quarantine of suspected individuals—were given as a model of what the rest of the world should do when faced with the spread of the pandemic.⁹ China’s public health system had been strengthened since the SARS crisis and had already provided a strong reply to H1N1 pandemic flu in 2009.¹⁰ On March 17, Xi Jinping went to Wuhan to declare that China’s fight against COVID-19 had been won, and the lockdown of Wuhan was ended on April 8. The official number of persons infected by SARS-CoV-2 in China was then 80,000, with around 3,200 deaths. These figures have been contested based on the reports of the funerary offices in Wuhan, which claim more than 40,000 additional deaths. The credibility of Wuhan as a sentinel territory, despite the high investment of Chinese authorities in biosecurity equipment, must therefore be questioned.¹¹

2 | THE FIRST TIGER: HONG KONG

In contrast, Hong Kong was designed as a sentinel post to prepare for respiratory disease pandemics as early as 1972. Kennedy Shortridge, a microbiologist trained in the school of “ecology of infectious diseases” built by Frank Macfarlane Burnet in Australia, moved to Hong Kong to create a laboratory where he could collect samples of influenza viruses from humans, pigs, and birds.¹² His hypothesis was that south China was “an epicentre of influenza pandemics” due to the proximity between ducks—who carry influenza viruses asymptotically and thus constitute their “animal reservoir”—pigs, and humans, which increases the chances of mutation, selection, and transmission of viruses from animals to humans, with unknown effects on the latter’s immune systems.¹³ Shortridge thus built a network of relationships (*guanxi*) with veterinarians and physicians in the neighbouring province of Guangdong in order

⁷Mayfair (1995).

⁸Derleth & Koldyk (2004); Audin (2015).

⁹World Health Organization (2020).

¹⁰MacPhail (2014); Manson (2016).

¹¹Duchâtel, Godement, & Zhu (2020).

¹²Burnet (1972); King (2002); Anderson (2004).

¹³Shortridge & Stuart-Harris (1982).

to collect samples from markets, farms, and hospitals, which he analysed in his laboratory and sent to the World Health Organization, who compared them to global data on the mutations of flu pandemics. When Shortridge created his lab in Hong Kong in 1972, the People's Republic of China had just taken the seat of the Republic of China (Taiwan) on WHO, and Hong Kong had been a British colony since 1840.

In 1979, Deng Xiaoping, the new leader of the People's Republic of China after the death of Mao Zedong in 1976, launched the formula "one country, two systems" to prepare for a peaceful reunification of Taiwan with "the motherland." The handover of Hong Kong to China, planned for 1997, was intended to be the experimental site for this formula. It was in this context, marked by a massive flood of Hong Kong citizens to other countries of the Commonwealth, that the fears over a new flu virus emerged.¹⁴ In February 1997, the H5N1 virus killed 5,000 chickens in Hong Kong poultry markets and infected 12 persons, of whom eight died. In November, the new Hong Kong government of Tung Chee-hwa, with Margaret Chan at the head of the Health Department, ordered the destruction of all the poultry living in the territory, that is, 1.5 million chickens, ducks, geese, and quails. Similar culling has been applied every time an influenza virus was found in a poultry farm, along with other measures for controlling the bird population: backyard poultry is forbidden, poultry markets are separated from other markets and cleaned every day, natural reserves where wild birds roost are closely monitored, and unvaccinated "sentinel chickens" are placed at the entrances to poultry farms. Thanks to these measures, the H5N1 virus has never infected humans in Hong Kong since 1997, while it has infected around 800 people, killing 500, in the rest of Asia, Europe, and Africa.¹⁵

In early 2003, when rumours of a respiratory disease arrived from Guangdong, microbiologists who had been hired by Kennedy Shortridge at Hong Kong University found birds infected with H5N1, and thought the disease in Guangdong came from birds. This turned out to be a wrong diagnosis but a good test of the warning system on zoonoses. After 2 weeks of testing for influenza in samples collected from patients of the mysterious disease in Guangzhou, Malik Peiris found that it was caused by a coronavirus—a viral family that was not known to jump from animals to humans—and Guan Yi showed that it was present in palmed civets butchered and consumed in China's wet markets as well as in bats, which constitute the animal reservoir for many viruses because of their strong immune systems.¹⁶ Shortridge, Peiris, and Guan consequently wrote: "The studies on the ecology of influenza led in Hong Kong in the 1970s, in which Hong Kong acted as a sentinel post for influenza, indicated that it was possible, for the first time, to do preparedness for flu on the avian level."¹⁷ Hong Kong was severely hit by the 2002–2004 SARS crisis, with around 1,000 persons infected, 300 deaths, and a major blow to its economy, but it quickly recovered with a new organization responsible for health emergencies, the Centre for Health Protection, and a new identity defending freedom of expression as a way to quickly send early warning signals to the world.¹⁸ During the SARS crisis, Hong Kong experts worked closely with WHO, whose role in global health governance was increased by its strong management of the crisis.

The effort to detect early warning signs of pandemics coming from birds or bats was successful with the H7N9 and the H5N8 avian influenza viruses that emerged from birds on the coast of mainland China in 2014, but it was less successful with the SARS-CoV-2 virus that emerged from bats in central China at the end of 2019. Hong Kong was then weakened by months of protests against Governor Carrie Lam's pro-Beijing policy, in the wake of the Umbrella Movement in 2014. Student riots, strongly supported by the majority of the population, led to a decrease in governmental support of academic research and teaching and to the closure of universities. The first months of the COVID-19 crisis in Hong Kong saw strong criticism of Carrie Lam's refusal to close the border with China. Despite a small number of casualties from COVID-19 in Hong Kong (1,000 infected, four deaths), probably due to civil mobilization in wearing masks, self-imposed lockdown, and the government's closure of schools until April

¹⁴Caroll (2007); Choy (2011).

¹⁵Smith (2006).

¹⁶Greenfeld (2006); Abraham (2007); Wang & Cowled (2015).

¹⁷Shortridge, Peiris, & Guan (2003).

¹⁸Leung & Bacon-Shone (2006).

20, Hong Kong lost its position of a sentinel post during this crisis, which Wuhan unsuccessfully tried to gain and for which Singapore competed.

3 | THE SECOND TIGER: SINGAPORE

In 2003, Singapore inaugurated its new centre for biotechnologies, planned 10 years earlier, named Biopolis. The Singapore government had massively invested in an economy of knowledge, attracting foreign academics and producing cutting-edge life sciences, particularly with the development of high-throughput sequencing.¹⁹ The SARS crisis in 2002–2004 provided Singaporean experts with an opportunity to benefit from these investments, although it also impacted the city's public health system with 230 persons infected and 33 deaths, thus alerting the population on the risks of future epidemics affecting the territory from mosquitoes such as chikungunya, dengue, or zika.²⁰ In the first months of the SARS crisis, the Singaporean researchers competed with those from Hong Kong to produce the first genetic sequence of COVID-19. Singapore lost the battle on SARS, since the genome was published by a team in Canada.²¹ But Singapore's authorities have invested substantially in technologies for the simulation of epidemics, either in hospitals and slaughterhouses where patients or chickens with H5N1 are manipulated by the staff to cope with the uncertainties of a real pandemic, or in desktop simulations using bioinformatics software.²² The central hospital of Singapore, Tan Tock Seng, was designed as a model hospital for the treatment of respiratory diseases after receiving the patients affected by SARS.²³ Major experts working on bat viruses and avian influenza, such as Wang Linfa and Gavin Smith, have been hired by Duke-National University of Singapore Medical School to launch programs for the surveillance of emerging infectious diseases.²⁴

In 2020, Singapore received global praise for its management of SARS-CoV-2. Despite its position as a hub of international connexions and its important Chinese diaspora, on April 13 Singapore declared 2,500 persons infected by the new virus with eight deaths—half the numbers declared in Hong Kong for a similar population of roughly 6 million people. The government of Singapore designed a strong policy of contact tracing through smartphones and of sanctions against infected persons who did not respect the quarantine measures. Through these measures, the Singapore government succeeded in keeping its economy open until April 11, 2020, at which point it issued a lockdown after a rapid surge in the number of infected persons.

4 | THE THIRD TIGER: TAIWAN

After poor results in the control of SARS in 2003, Taiwan appears to be the main winner in the Asian competition to prepare for the COVID-19 pandemic. The Republic of China, under the protection of the United States, invested massively in public health after its transfer from mainland China to Taiwan in 1949, with the eradication of bubonic plague (1948), rabies (1959), cholera (1964), smallpox (1965), and malaria (1965). However, the 1990's marked a return of infectious diseases with the spread of HIV/AIDS, new cases of tuberculosis, and the enterovirus 71 crisis that caused 78 deaths in 1998. Consequently, the Centers for Disease Control was created in Taiwan in 1999, which organized simulations of bioterrorist attacks using anthrax in Taipei in October 2001. The first SARS-infected patient arrived in Taiwan on March 15, 2003, and the state successfully controlled travel-related patients until April 21, when most cases became hospital-acquired. The number of persons infected by SARS in June 2003 was 686, with

¹⁹Fischer (2013); Ong (2016).

²⁰Hoong (2004); James, Shindo, Cutter, Ma, & Chew (2006).

²¹Marra (2003).

²²Keck (2018).

²³Tambyah & Leung (2006).

²⁴Wang & Cowled (2015); Smith et al. (2006); Vijaykrishna et al. (2007).

181 deaths. More than 150,000 persons were quarantined, comprising 0.7% of the population. The control of SARS played a major role in the reelection of Chen Shui-Bian, from the Democratic party, as president of the Republic of China in March 2004, despite his poor results on the economic front, because he successfully framed SARS as a national security issue. Consequently, Chen supported public health measures on the control of H5N1 when it spread from Guangdong to the rest of Asia in 2005.²⁵

Similarly, the Democratic government of Tsai Ying-Wen made strong decisions for controlling COVID-19 from the start of the crisis. On February 6, 2020, it stopped arrivals from China and imposed a quarantine on those who came from the most affected areas, offering them phones to follow their displacements by GPS—a bureaucratic practice commonly used in tracing arrivals from China to Taiwan.²⁶ It combined databases from social security and border control to provide information on its population and track those who were most at risk of contracting the disease. Taiwan has also been successful in rapidly producing masks—10 million per day—and offering them to countries in need, as a sanitary diplomacy rivalling that of mainland China. It has been at the vanguard of stockpiling vaccines and antivirals in the last 10 years due to its strong pharmaceutical industry.²⁷ On April 13, Taiwan declared 388 cases of COVID-19 and 6 deaths. This performance in controlling the epidemic is all the more impressive as Taiwan was expelled from WHO in 2018 and does not follow WHO guidelines.

5 | THE FOURTH TIGER: SOUTH KOREA

South Korea has been criticized by WHO for its poor management of COVID-19 in February 2020, with an outbreak in the city of Daegu caused by the return from Wuhan of members of an evangelical movement, Jesus Shincheonji. It was the most affected country in Asia after China, with 8,500 cases and 81 deaths declared to WHO on March 17, 2020. South Korea had previously been blamed for its poor management of the MERS-CoV virus in 2015, with the only outbreak of this disease, which was transmitted from camels to humans, outside of Saudi Arabia, after a Korean businessman travelling from Saudi Arabia caused 186 human infections and 38 deaths in South Korea. Because of these two failures in public health management, the Korean authorities have been very active in testing and controlling the population during the COVID-19 crisis, with 20,000 tests per day organized freely by the government of Moon Jae-in since March 20, 2020. This policy of massive testing has been praised by WHO and used as a model by the German government of Angela Merkel. The South Korean government also used smartphones to provide information on a real-time and transparent basis about the number of masks available in drugstores all over the country as well as on infected patients living in the neighbourhood, with little debate on the threat this might pose to individual freedoms. On April 13, 2020, South Korea declared 10,000 cases and 217 deaths.²⁸

6 | THE FOX AND THE WOLF: JAPAN AND VIETNAM

The Japanese experience of the COVID-19 crisis is strongly influenced by the way it managed the 2002–2004 SARS crisis. Japan has been the first State to promote modern public health in Asia since the training of Japanese microbiologists in Germany, such as Kitasato Shibasaburō who was in competition with the Swiss French-trained Alexander Yersin for the discovery of the plague bacillus in Hong Kong in 1894.²⁹ The reputation of Japanese bacteriologists was tarnished by the creation of Unit 731 by the Imperial Army in Harbin, Manchuria, where biological weapons

²⁵Chen (2004); Rollet (2014).

²⁶Friedmann (2015).

²⁷Chen (2015).

²⁸Fischer & Sang-Hun (2020).

²⁹Rogaski (2004).

experiments were carried out, under the command of Shiro Ishii, on Chinese subjects.³⁰ However, the SARS crisis was an opportunity for Japanese scientists to regain their reputation as providers of public health measures on the Asian continent. Since no cases of SARS were declared in Japan, measures that worked in Japan were recommended by Japanese experts in other Asian countries.

In March 2003, the Japanese government ordered that visa applicants from China and Taiwan be interviewed and, if necessary, that the applicants present a doctor's certificate stating they were not infected with SARS. Quarantine systems at airports were strengthened, including random temperature checks on all passengers, regardless of their point of departure. Similar measures were put into place at ports where cruise and cargo ships from China, Hong Kong, and Taiwan were docked. Japan also sent medical teams to Vietnam, Mongolia, and China to help stem the spread of the virus.³¹

Since the SARS crisis, it is estimated that the number of Chinese tourists and workers coming to Japan has been multiplied by 10, which led Japanese authorities to strengthen the measures that had been taken against SARS in 2003 in the face of the new COVID-19 crisis. On February 27, 2020, Prime Minister Shinzo Abe requested that all Japanese schools close until early April; on April 7, he declared a 1-month emergency for most areas of the country. The British cruise ship *Diamond Princess* was quarantined for 2 months in the port of Yokohama after passengers were diagnosed with COVID-9 on February 4. The postponement of the Tokyo Olympic Games from summer 2020 to 2021 has been one of the most spectacular measures in demonstrating the seriousness of the threat at both the Japanese and global levels. On April 13, 2020, the number of infected persons declared by Japan was 7,000, with 100 deaths. Because the government was opposed to a systematic testing policy on the model of South Korea, and published an increase in the number of cases after announcing the postponement of the Olympic Games, the population has showed little trust in the government's statistics, and this lack of trust reminded observers of the poor management of the Fukushima disaster in 2012. In contrast, the governor of Tokyo, Yuriko Koike, has been portrayed as a hero because she warned the city early of the threat of the virus. There has been speculation about the number of persons dying at home for fear of going to the hospital, and about the efficacy of "traditional" measures of social distancing in the Japanese population. The Japanese government has not made lockdown compulsory in order to avoid paying for the losses of private companies, providing the official reason that it had to cope with the cost of postponing the Olympic Games.³²

The assistance of Japanese doctors helped Vietnam control the SARS crisis in 2003. As a consequence, Vietnam was praised by WHO as a model of epidemic management despite its poor hospital system and decades of isolation from international organizations. The first case of SARS in Vietnam was a Chinese-American businessman who arrived in Hanoi on February 26 and infected 63 persons, of whom 39 were hospital staff, notably including the Italian doctor Carlo Urbani who warned WHO of the severity of the disease and died of SARS on March 29.³³ The Vietnamese government, following recommendations from WHO as well as Japanese experts, transferred all SARS patients to Bach Mai Hospital in Hanoi, and traced all contacts with the 63 patients infected, launching a massive campaign of prevention and isolation. This campaign was successful in limiting the epidemic to the 63 persons in contact with "patient zero," out of whom 5 died. On April 28, Vietnam was the first country declared "free of SARS" by WHO.³⁴

Subsequently, Vietnam was considered a model in its control of emerging infectious diseases such as H5N1, against which it organized campaigns of prevention in the countryside with veterinarians vaccinating chickens and culling them when a suspected case was declared.³⁵ The experience of the communist state in mobilizing its population was useful in the fight against SARS and H5N1, and gave Vietnam a new position in the global health

³⁰Williams & Wallace (1989).

³¹Johnston (2020).

³²Rich & Ueno (2020).

³³Greenfeld (2006).

³⁴Ohara (2004).

³⁵Porter (2013).

governance after decades of marginalization. On February 1, 2020, the government of Vietnam closed its borders with China, built hospitals around Ho Chi Minh City, and closed schools all over the country. Social networks were used to advertise prevention gestures, such as washing hands and wearing masks, and sanctions were imposed on those who did not respect them. At the end of April 2020, the Vietnamese government declared 240 patients infected with SARS-CoV-2, all related to patients from China or South Korea, but no deaths; it has sent 550,000 masks to European countries. Worries have been expressed in Western media about the lack of public information about infected patients.

It can be argued, following my animal metaphors, that the fox, with its long experience in dealing with viruses, has helped the wolf exit the forest and become a respected animal in the community of nations.

7 | CONCLUSION

The use of animal metaphors (dragon, tiger, fox, and lion) has allowed me to go beyond sheer statistical comparison of Asian countries' performances of in dealing with COVID-19, to analyse the virtues and competences mobilized by states in controlling the epidemic in their territories: power, quickness, intelligence, and strength. These competences become virtues when they are expressed in a competitive and collaborative environment in which every government reacts in comparison to another: Asian tigers must be as quick as possible when faced with the power of the Chinese dragon, the Vietnamese wolf expresses strength because it borrows intelligence from Japan.³⁶ There is indeed a mythical dimension in the narratives Asian societies tell about their relations to China through the viruses it spreads to the world, following the scenarios built by Kennedy Shortridge in Hong Kong in the 1970's about the origins of pandemic influenza, which have been confirmed by the following health crises.³⁷ Techniques of preparedness mobilize an imaginary of human-animal relationships that appears not only in the media, such as daily newspapers or films about contagion, but also in the design of sentinel devices, that is, techniques to stop viruses from causing pandemics at the borders between species and between territories, such as unvaccinated chickens in a poultry farm or wild birds equipped to send signals of species extinction.³⁸

This article, therefore, does not assess how successfully Asian governments have implemented sentinel devices, but describes the social, anthropological, and ecological contexts in which they have done so. If the 2002–2004 SARS crisis was a constitutive trauma for Asian societies, it was not only because it revealed the vulnerabilities of China as an emerging superpower, but also because it fostered the Asian imaginary of bats and birds as reservoirs of emerging viruses. This imaginary derived from real human-animal relationships can be transcribed within the history of science to understand the paradoxical solidarity produced by the competition between Asian states in fighting to mitigate the COVID-19 pandemic. The metaphors of dragon, tiger, fox, and wolf describe ostensive behaviours of power, quickness, intelligence, and strength that serve as signals sent out by states in reacting to the crisis.

Ornithologists have observed sentinel behaviours among non-human animals. Babblers in the Negev desert send "costly signals" of their value when they compete to attract females and peacefully communicate with their predator: instead of one bird shouting to raise fear and alarm, several male birds sing in a choir to show the predator it has been seen.³⁹ Bowerbirds in Papua New Guinea build structures to attract females, who visit and compare them, suggesting the existence of aesthetic competences.⁴⁰ In stressful situations of predation and reproduction,

³⁶Since the writing of this paper, China has adopted the diplomacy of the "wolf warrior" (Zheng 2020) to protest against accusations of being the origin of the pandemic. This confirms my analysis of metaphors in a structuralist way. The Chinese dragon is to the Asian tigers what the Vietnamese wolf is to the Japanese fox: an indicator of the competition and collaboration between socialist and liberal regimes in the globalized form of capitalism threatened by emerging viruses. Rather than investigating the origin of the virus, which is a task for mythology, social sciences should look at the transformations of relations between living beings after the emergence of COVID-19.

³⁷Lynteris (2019).

³⁸Keck (2020).

³⁹Zahavi & Zahavi (1997).

⁴⁰Endler (2012).

animals rely on sentinel behaviours to communicate with each other through beautiful signals. Similarly, it could be shown that by competing to control their population and make true statements about viruses, Asian nation states send costly signals to investors in a global competition for trust, which is also a collaboration to make a better world. The COVID-19 pandemic can indeed be described as a global war between nation-states and the SARS-CoV-2 virus, in which sentinel devices give national governments assets in a competition to attract investors by providing safety through costly signals endowed with financial and aesthetic value. It remains to be seen how investors will react to this political display, and how much this competition between nation-states relies on the collaboration between scientists to share information through sample transfer, data banks, and technical support. Solidarity might be a name for this mix of competition and collaboration when humans are faced with a public health crisis.

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