Frédéric Keck, *Avian Reservoirs: Virus Hunters and Birdwatchers in Chinese Sentinel Posts*

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Although conceived primarily as a work indebted to a post-SARS China (China, Hong Kong), East Asia, and Southeast Asia, Frédéric Keck's *Avian Reservoirs: Virus Hunters and Birdwatchers in Chinese Sentinel Posts* works extremely well in the midst of COVID-19, asking many of the same questions that policymakers have been asking since late 2019: how did this set of circumstances occur, and what might have been done to anticipate these developments? A structuralist anthropologist interested in biology, animal populations, and the relationships between animal and human communities, Keck selects three sites for his comparative ethnographic analysis: Hong Kong, Taiwan, and Singapore. Within this framework, Keck directs his questions to look broadly at the rituals and material practices of the biosciences, especially measures taken in terms of preventive medicine in the aftermath of the SARS crisis of 2003. At the same time, Keck invests equally in unpacking the dense nexus of biopolitics informing a wide range of health strategies.

Lending the work additional currency is its close emphasis on zoonosis, the movement of disease from animals to humans. In the aftermath of 2003, with SARS spreading for several months, the association of proximity to sites such as markets and farms led to heightened concerns in the region, and along with this, much greater attention by public health officials to the need for scrutiny, taking measures such as culling. SARS, along with MERS—although the latter had much less of an impact in northeast Asia—has created a context in which future pandemics remain at the edge of consciousness, requiring policymakers to have contingency plans. Again, although not an explicit focus of the book, the relatively strong responses by most of the region's governments to COVID-19 (especially Taiwan) lends relevance to the questions raised here and to the specific sites explored. To this end, Keck's ethnography poses precisely the issue of how his three sites have prepared for their next encounter with epidemic disease. As he emphasizes in his introduction, though, culling, or what he terms "prevention," represents only one limited strategy situated among a much broader menu of forms of surveillance.

In the first section of the work (chapters 1–3), consisting of theory, Keck emphasizes this last point, noting that the various actors involved—microbiologists, epidemiologists, and public health officials—often take very different responses to animal populations, a significant point in the context of detecting, defining, and responding to an outbreak. Culling, as mentioned, is cast in the language of human intervention, a sign that the relationship with nearby animal populations has already gone "wrong," in some sense. In contrast, Keck begins this theory section with an in-depth inquiry, historically and anthropologically, into how such relationships have been framed, or more specifically, how animal diseases "have been used to think about the social" (5), given that human communities have frequently lived in common with animals (e.g., agrarian, hunter-gatherer communities). This motivation greatly enlarges the possible actions, and Keck wants his readers to move from a strict notion of prevention as defined by public health to include newer possibilities in which diseases might be understood in context, taking a more ecological approach. In other words, the disease mechanism as a set of conditions or circumstances takes on just as much significance,

with Keck offering an alternative set of descriptive terms, now including "prevention, precaution, and preparedness" (5).

In chapters 2 and 3, Keck examines two types of spaces with links to the collection and study of biological objects: labs and museums. In the former (chapter 2), he examines mutations occurring in the confines of the lab, pondering the fundamental instability of the objects in question. In turn, this issue also raises questions about the ability of the researcher to simulate a version of what happens in nature. Chapter 3 introduces a second major cluster of themes, repository and storage, looking at the placement and classification of biological objects as specimens. Here the focus is not just the museum, familiar to many through the work of Paula Findlen, but the genealogy of entire fields such as virology and ornithology relative to the very place where many of the first objects were housed. As Keck emphasizes throughout, he seeks to situate watchers (bird and virus hunters) and animal populations in terms of establishing a set of relationships—rather than a reduced notion of strict causality—using the anthropology of the hunter-gatherer as his model.

The second half of the book moves from theory to three in-depth case studies (chapters 4–6), and Keck's ethnographic richness draws out a great deal from his sites, each of which remains situated in the context of China. For its part, Hong Kong is described primarily as "watching," with flocks of birds standing in as a signal for what may come. In contrast, Singapore, with its extensive investment in biological infrastructure—including an extended relationship with Duke University in the form of Duke-NUS Medical School, along with the Biopolis science park—since the early 2000s, represents a space of simulation, where events may be modelled and compared within controlled spaces. Finally, Taiwan stands in for storage or repository, whether referring to drugs, or more extensively, to samples of bird flu and specimens, to be used not just for short-term study but also in preparation for the next pandemic. If Keck is clearly less interested in outlining the mechanics of the biology, these sections work nicely as laying out a contemporary understanding of the biosciences as a kind of state practice, with the theoretical section now juxtaposed against this material, raising questions directed against an untroubled account of events.

Ultimately Keck's work offers a global view of China and the region, and if it remains less invested in the concerns of area studies specialists, it fits nicely with much of contemporary medical anthropology, especially recent work on biology, biosciences, and even environmental history. A shortlist here would certainly include the work of Emma Kowal, Andrew Lakoff, Joanna Radin, and also recent takes on the significance of seeds and repositories, here including David Fedman and Courtney Fullilove. Although less concerned with the history of medicine per se, *Asian Reservoirs* also touches upon tropical medicine and its historical overlaps with colonialism (prior to global medicine), and again, some of the richest material asks critical questions concerning the genealogy of fields in relation to how the boundaries of the human have been framed. The work of Warwick Anderson on *kuru* and tropical medicine comes to mind, and Keck remains relevant to past encounters with epidemic disease, especially for China and Hong Kong. Theoretically sophisticated, and holding ethnographical ambitions, *Avian Reservoirs* offers much to consider with the questions it poses, actively seeking to "decenter humans by showing their dependence on other species" (178).

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