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Hamsters, Pet Trade and Biosecurity During the 2022 COVID-19 Outbreaks in Hong Kong

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ABSTRACT

This paper uses the 2022 mass culling of pet hamsters in Hong Kong during COVID-19 to explore the biosecurity logics that guide responses to zoonotic outbreaks. Drawing on post-humanist perspectives and infrastructure studies, this paper demonstrates how disease transmission emerges through entanglements of animals, human practices, and global flows. In this case, hamsters acted as active participants in the co-production of medical knowledge, particularly epidemiological knowledge around COVID-19 and functioned as biological vectors, experimental subjects, and triggers for policy. However, they were quickly deemed expendable once cast as threats. The case reveals how crisis-driven infrastructures, such as testing regimes, favour rapid containment and human-centred risk elimination, masking the ecological, political, economic, and infrastructural forces of industrial breeding, global trade networks, and urban design that create vulnerability. It also exposes the shortcomings of health governance frameworks such as One Health, which too often defaults to eradication rather than addressing the uneven distribution of risk and care across species. Arguing for a shift toward a disease ecology paradigm that attends to global flows in shaping multispecies relations, this article calls for biosecurity strategies rooted in relational coexistence, structural change, and long-term ecological resilience rather than eradication and exclusion.

Introduction

In January 2022, Hong Kong officials traced a handful of COVID-19 cases to pet hamsters imported from Europe. Working with virologists at the University of Hong Kong (HKU), the Agriculture, Fisheries, and Conservation Department (AFCD) confirmed that several animals carried the Delta variant — a strain no longer circulating in the city's human population. Within days, roughly 2,000 hamsters and other small mammals were collected from homes and pet shops, euthanised, and tested. People linked to affected shops were also screened. For pet owners, the sudden recall was distressing. For health authorities, the culling in the end was presented as a necessary step to prevent a larger outbreak.

On the surface, this is a story about a decisive biosecurity measure. But look closer, and it raises broader questions about how animals are positioned during zoonotic

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emergencies. In public health discourse, animals are often central to understanding how pathogens move between species. Yet in moments of crisis, their role can shift abruptly from valued research subjects or surveillance "sentinels" to expendable risks. The hamster case in Hong Kong draws together themes that are usually discussed in isolation, that is, a local history of animal-centred disease control, the transnational logistics of the pet trade, and the infrastructures built for pandemic preparedness, making it a rich example for examining how biosecurity reasoning plays out.

This paper takes the culling as a starting point to consider two related questions. First, what happens when animals are treated not only as potential disease carriers but as participants in a wider set of circulation of goods, capital, and policy? Second, how does that position change under the pressure of a declared emergency? The analysis draws on post-humanist and infrastructure-focused work within Science and Technology Studies (STS), alongside disease ecology, to show that the hamster case is not an oddity but part of a recurring pattern in which multispecies interdependence is recognised in theory yet obscured in practice when human health appears to be at stake.

The case of Hong Kong offers a particularly sharp vantage point for this discussion. The city's experience with plague, avian influenza, and SARS throughout history has produced a distinctive mix of ecological thinking and rapid-response governance. Since the 1970s, partnerships between government departments and HKU virologists have mapped "virus traffic" across wild birds, poultry, and humans, shaping global understandings of zoonotic emergence. At the same time, these systems are built for speed. They are designed to detect and contain outbreaks quickly, often by removing suspected animal hosts entirely, as seen in the 1997 influenza outbreak. In 2022, the same mechanism was activated, but the animals in question were not poultry from local markets or migratory birds from the Mai Po wetland; they were imported pets.

The outbreak also makes visible a layer of the pandemic story that usually stays in the background: the globalised supply chains that move live animals across continents. The infected hamsters had travelled from large-scale breeding facilities in Europe, through cargo hubs in the Middle East and Southeast Asia, before arriving in Hong Kong. Prolonged transit, cramped conditions, and minimal welfare provisions create stresses that can weaken immune responses — circumstances well suited to viral amplification. These movements are embedded in a "just-in-time" pet trade system that prioritises efficiency over ecological resilience, and they are rarely considered when policymakers talk about controlling infectious disease.

By situating the hamster case within these histories and networks, this paper makes two claims. First, crisis-oriented infrastructures, including mass testing, quarantine protocols, and epidemiological modelling, tend to prioritise rapid containment and human-centred safety, even when that means ignoring the broader conditions that allow pathogens to emerge and circulate. Second, biosecurity strategies would benefit from moving away from eradication logics toward approaches that address the structural drivers of risk and which take multispecies relationships seriously. The arguments unfold in three steps. The next section reviews key work in STS, in particular infrastructure studies and post-humanist perspectives, focusing on how animals contribute to scientific knowledge and public health practice. The following section turns to Hong Kong's medical and ecological history to show how animals have been positioned in earlier outbreaks. The third examines the hamster case in detail, tracing how it was framed and acted upon, and what this reveals about the limits of current biosecurity reasoning. The final section and conclusion consider what a more relational and ecologically grounded approach to preparedness might look like, which could work not only in Hong Kong but in other places grappling with ongoing and future zoonotic threats.

Literature Review

The production of scientific knowledge is not a task for humans alone. The scholarship of science and Technology Studies (STS) has long emphasised that non-human actors, such as animals, microbes, and technologies, help shape how we discover, understand, and organise the world. This paper draws on post-humanist approaches that take animals seriously as actors, and infrastructure-focused work on how knowledge systems shape outbreak response. These perspectives make the hamster case visible as more than an unusual episode in Hong Kong's COVID-19 story and help explain how animals are positioned in biosecurity reasoning, and how these positions can change when a declared emergency compresses decision-making.

The post-humanist perspectives unsettle the assumption that humans are the only authors of scientific and political action. Latour (2005)'s actor-network theory, developed through his earlier work such as Latour and Woolgar (1979), argues that agency emerges through heterogeneous networks of humans, technologies, and organisms. This reminds us that the power to act does not only reside in people but in connections between humans, technologies, and other living beings, such as animals. Further to this, Haraway (2008) argues that respect, curiosity, and even scientific knowledge spring from encounters between different interspecies. In these relationships, humans and animals form partnerships that allow them to evolve together, a process Haraway describes as "become-with", which challenges the belief that humans stand apart from or above nature. These ideas resonate with post-humanist critiques of anthropocentrism and suggest alternative ways of understanding knowledge production by emphasising non-human factors and perspectives.

Animals often play a critical role in shaping scientific and biopolitical practices, yet they are also understudied or often treated as background figures rather than key actors.

Jacques Derrida's *The Animal That Therefore I Am* (Derrida & Mallet, 2008), for example, takes issue with the tendency to lump all animals into one single category and sees this as a form of violence that erases difference and agency. This way of thinking frames animals as "the animal", strips them of their agency and reinforces a hierarchy that places humans above other life. Building on this insight, STS scholars have extended the critique by tracing the ways animal-human entanglements unfold, particularly in the field of health and disease ecologies. For example, Nading (2013)'s ethnographic work on dengue in Nicaragua reveals mosquitoes as "nonhuman neighbours" with their behaviours and habitats directly influencing public health measures. Hinchliffe et al. (2013) argue that zoonotic risks arise from "fluid and interactive" relationships between humans and animals, rather than from rigid biological separations. Historical work has also shown how animals have been enrolled as technologies in public health interventions. Mukharji (2018), for example, examines Andrew Buchanan's early 20th-century scheme in British India to use domestic cats as plague-preventing "animal technologies." Buchanan's campaign drew on local observations and mobilised cats as rat-killers and circulated the method through trans-imperial networks. These studies challenge the view of animals as mere disease vectors or reservoirs, positioning them instead as active participants within multispecies assemblages where biology, technology, and policy intersect.

A scholarship of infrastructure studies within STS pays attention to the systems that enable or limit particular responses. Infrastructures are not neutral backdrops but social and political arrangements that are embedded in particular histories and values (Bowker & Star, 1999; Star & Ruhleder, 1996). During outbreaks, infrastructures shape how threats are detected, interpreted, and acted upon, often invisibly until they break down. Disease surveillance networks, testing regimes, and quarantine protocols are forms of "information infrastructure" (Bowker et al., 2010) that carry embedded assumptions about whose lives matter and what counts as effective control. Larkin (2013) points to the cultural and political dimensions of infrastructure, while Keck (2020) showing how avian influenza "sentinel posts" in Asia link human–animal surveillance to global biosecurity politics.

Social sciences have been important in framing disease ecologies, shifting focus from linear models of pathogen transmission to the socio-economic conditions that enable zoonotic spillover. Urbanisation, for example, forces humans and animals into closer proximity and amplifies risks as cities encroach on natural habitats. These risks are exacerbated by industrialised agriculture, which crowds livestock into pathogen-incubating conditions, and deforestation, which displaces wildlife into human spaces. Globalised flows, such as trade, then circulate zoonotic threats worldwide. Recent scholarship on outbreak preparedness pushes these ideas further. For example, Anderson et al. (2025) propose the concept of 'epistemic preparedness' and argue for inclusive data practices, flexible modelling, and spatial–temporal framings that bring ecological, social, and political contexts into view, instead of relying on reductive 'crisis technologies' such as fast outbreak models or stockpiles. They insist that preparedness should also involve decolonising knowledge systems and value insights from social scientists, humanities and environmental scholars.

The recent COVID-19 pandemic has laid bare these entanglements, exposing how our efforts to control outbreaks are deeply intertwined with the roles that animal actors play in the wider, entangled network. This global crisis has offered much empirical evidence for probing into different modes of outbreak control and the complex relationships between species. While all coronaviruses known to infect humans are zoonotic—many thought to originate in bat hosts (Latinne et al., 2024)—the virus also spilled back into animals from humans. For example, the first confirmed cases of the virus moving from humans to animals occurred on Dutch mink farms. Once the virus entered these farms, mink quickly became a reservoir, with rapid intra- and interspecies transmission fueling further spread to humans and other animals. This rapid interspecies transmission led to mutations and the emergence of mink-associated variants, resulting in the culling of millions of mink worldwide (Jahid et al., 2024).

Animal Surveillance and Biosecurity in Hong Kong's Outbreak History

Hong Kong's history as a hub for tropical and zoonotic diseases is inseparable from its ecologies and colonial past. Its tropical climate, coupled with close interactions between humans and animals, made the city a reservoir for infectious diseases in the late 19th century. During that period, outbreaks in colonial Hong Kong disrupted trade and raised alarm among colonial authorities, prompting early efforts to build disease control and medical research infrastructure. After the bubonic plague, for example, the British government, eager to revive the economy, set up a healthcare and medical system in 1906 (Yip et al., 2016). This laid the groundwork for Western medicine to become a critical part of Hong Kong's disease management, which earned the city the label of a "living laboratory" for infectious disease research (MacPhail, 2018).

Worldwide, in the 20th century, the rise of disease ecology emerged as an alternative to earlier, one-dimensional explanations of disease, opening the way for scientists to consider how pathogens circulate within broader biological and environmental systems. Virologists such as F. Macfarlane Burnet and Frank Fenner championed an approach that emphasised the interplay between hosts and pathogens (Anderson, 2004, 2016). In Hong Kong, this ecological reasoning gained traction as medical experts began to understand that the transmission of diseases is shaped by multiple factors, including human mobility and social practices. The role of animals, too, is essential in this framework. For example, the discovery of the plague bacillus during the bubonic plague in Hong Kong, and later the identification of rats as key carriers in the early 1900s, demonstrated the complex relationship between animal vectors and human epidemics (Sihn, 2017; Starling et al., 2006).

This legacy of linking animals with disease control continued with influenza research in the 1970s. Kennedy Shortridge, an Australian influenza virologist who was trained by Burnet, relocated to Hong Kong in the 1970s and explicated the ecology of wild birds and livestock (Sims & Peiris, 2013). Together with his team at the University of Hong Kong (HKU), Shortridge studied animal pathogens to understand the emergence of avian influenza and its spread to humans. They discovered that swine (Shortridge et al., 1977) and ducks (Shortridge, 1982) were important sources of genetic material pertinent to human influenza. Later, in 1997, the highly pathogenic H5N1 prompted immediate investigations by HKU in collaboration with local authorities and the World Health Organisation (WHO). Researchers found that mutations in avian viruses had enabled them to breach the species barrier, a discovery that reshaped people's understanding of interspecies transmission (Honigsbaum, 2020).

Since the H5N1 outbreak, the HKU team and government departments have been actively monitoring poultry and wild birds. Regular collection of samples in the live poultry market is carried out, followed by serological monitoring. Wild birds' fecal swabs are obtained mainly from the Mai Po nature reserve, and dead wild birds are examined throughout Hong Kong. This surveillance routine mapped out a path to understanding the 'virus traffic' of influenza. It revealed the geographical and genetic movement of H5N1 (Guan et al., 2002), and its ability to survive in seemingly healthy birds (Sims et al, 2003), which resulted in several control interventions in wet markets. As a result, Hong Kong has not experienced a significant influenza outbreak since 1997.

During the SARS outbreak in 2003, the importance of ecological reasoning and the development of modern research infrastructure since the 1970s was further demonstrated. Investigations led by Hong Kong-based expert Malik Peiris and his team conducted a viral genome hunt and discovered that the virus that had caused SARS was a kind of coronavirus (Peiris et al., 2003), instead of bird flu. Meanwhile, Guan Yi uncovered that animals, such as palm civets and raccoon dogs, played a role as intermediate hosts for SARS-CoV-1 (Guan et al., 2003). This finding linked the emergence of the virus to local cultural practices, such as exotic dining, and highlighted the need for policy interventions such as banning wild animal markets to prevent further outbreaks.

This history shows that Hong Kong's outbreak responses have consistently emphasised the role of animals in disease transmission. This focus remains essential in the recent context of COVID-19. For instance, early in the pandemic, Hong Kong made a significant discovery by identifying one of the first cases of animal infection, when a pet dog tested positive, which provided valuable insights into cross-species transmission (Sit et al., 2020). In the following section, I will turn to the central case of this paper and examine the case of hamsters. I examine how hamsters' involvement not only shaped Hong Kong's public health response but also offers a lens through which to understand how trade, mobility, and the circulation of people and goods influence viral spread. Rather than treating animals solely as reservoirs, I explore the potential of a more ecological and relational approach that accounts for animals' roles while also addressing the social and infrastructural conditions that shape zoonotic risk. I argue that effective responses must move beyond blame and containment to critically engage with the global systems that entangle human and nonhuman lives.

Hamsters and Animal–Human Entanglements Through Pet Trade

Although the first case of COVID-19 was found in the mainland city of Wuhan, Hong Kong scientists quickly leveraged their resources and network in the nearby Guangdong Province to provide vital epidemiological insights into the transmission. In January 2020, when Hong Kong had not yet reported any case, the HKU–Shenzhen Hospital identified a family of six patients, five of whom had travelled to Wuhan and one infected through family contact. This offered the first scientific evidence of human-to-human transmission and suggested an animal origin for the virus (Chan et al., 2020). Meanwhile, in this highly urbanised city, where animals are limited to migratory birds, livestock and pets, animal health management is important during epidemics like this. Drawing on the pet quarantine system established during the SARS outbreak in 2003, the Agriculture, Fisheries and Conservation Department (AFCD) reactivated its protocols for COVID-19. It was through this system that they identified Hong Kong's first infected dog.

Fast forward to January 2022. Though Hong Kong maintained a low number of COVID-19 cases through strict measures, a pet shop worker unexpectedly tested positive. At the time, that case was not immediately alarming because there was little evidence that pets, aside from farmed mink, could infect humans. Prior zoonotic transmission had only been demonstrated with mink-adapted SARS-CoV-2 during outbreaks in high-density mink farms in countries like Denmark (Hammer et al., 2021) and the Netherlands (Oude Munnink et al., 2021). However, when HKU researchers sequenced the virus from the pet shop worker, they found a Delta variant previously unseen in Hong Kong. By that time, Delta had already been replaced by Omicron in the human population worldwide. This discovery led the HKU team, working with the AFCD, to trace contacts linked to the shop and test the animals on site. Several Syrian hamsters there tested positive. When the team extended sampling to the warehouse that supplied the shop, where imported animals are held before distribution, they found additional cases also among Syrian hamsters. Subsequent investigations also identified infected pet shop customers who had been in contact with the infected worker (Yen et al., 2022). In the end, it was confirmed that the reintroduction of the Delta virus into Hong Kong was linked to imported pet Syrian hamsters, leading to a small outbreak in humans.

The hamsters, as the key players of this outbreak, were imported from the Netherlands to Hong Kong in two distinct batches. The first shipment arrived on December 22, 2021, via Qatar Airways with a 15-hour transit in Doha. During the layover, the cargo hold was opened to top up water, though no food was provided. This consignment included 96 rabbits and more than 1000 hamsters. The second shipment arrived on January 7, 2022, via KLM with a stopover in Bangkok, where cargo destined for that city was offloaded, yet the animals remained onboard (Yen et al., 2022). Throughout their journey, these animals moved through a complex network of stops and exchanges on the plane, mingling with other hamsters and different species along the way. Long transits, temperature fluctuations, and minimal welfare protocols during transport not only stress the animals but can also weaken their immune systems, creating conditions for viral transmission and spillover.

These logistics exposed a "just-in-time" global supply chain that treats animals as commodities rather than sentient beings. As Ali and Keil (2009) have shown that outbreaks, such as SARS, emerge from global networks of social and environmental interactions, where movement and exchange favour economic efficiency over ecological resilience. While the origins of COVID-19 are often reductively debated and traced to "exotic" wildlife markets or a singular spillover event, the pandemic reflects a far broader structural reality: the globalised systems of trade, urbanisation, and agro-industrial expansion that intensify human-animal interactions. Yet, even as topics like air travel and urban density dominate the COVID-19 discussions, it is less common to recognise that infectious disease transmission is deeply embedded in global flows of capital, commodities, and living beings, with animals playing an active role in these networks.

John Law (2006)'s analysis of the 2001 foot-and-mouth disease outbreak in the United Kingdom provides a critical lens for understanding this case in Hong Kong. Law contends that outbreaks are not isolated viral events but "normal accidents", systemic failures that emerge from the intersection of economic, political, and ecological flows. In his perspective, economic pressure, lax biosecurity policies and ecologies (such as the adaptability of pathogens) converge to create these vulnerabilities. Like the foot-and-mouth disease's spread through UK livestock networks, the hamster case reveals how zoonotic risks are structurally embedded in globalised systems of trade and governance. The pet trade is driven by economic pressure to move animals quickly and cheaply. In this system, animal welfare is minimal and genomic surveillance is rare. These conditions open gaps in global trade networks that allow pathogens to spread, first among hamsters and then to humans.

This entangled network of trade, policy, and ecology challenges us to rethink the role of animals in epidemic dynamics. As outlined in the literature review section, many biomedical and public health discourses have seen animals as passive vectors and incidental carriers of the disease. This understanding has roots in germ-theory-era epidemiology, which tended to isolate the pathogen from its environmental and multispecies contexts. In this mode, the pathogen is understood to move through a chain of hosts without attention to species-specific differences or the socio-material setting in which these host live. This understanding of epidemiology is shared in the portrayal of rats during the bubonic plague, where rats were depicted as hazards to be eliminated, with limited consideration for how the rat population were influenced by factors such as urban design, climate, or infrastructure that facilitated rat dispersal and pathogen survival (Echenberg, 2007).

The hamster outbreak in this paper suggests a different view. It shows that human and non-human lives are linked through systems that move animals as commodities, concentrate them in stressful environments, and place them in close proximity to other species, including humans. These conditions can influence viral adaptation and transmission. In this context, rather than being passive vectors, animals in these systems are active participants whose biological responses can directly impact viral evolution and transmission. The conditions of their movement, housing, and care influence their stress level, immune responses, and exposure to other animals. These biological responses, in turn, can affect how viruses adapt inside them. Genomic sequencing in this case revealed that viral mutations arose while the animals were in transit and in contact with humans, showing the viral change was largely shaped by their physiology and the human-managed environments they passed through. Human and non-human health, then, are not separate domains that occasionally intersect but are co-produced together through shared infrastructure of trade, regulation and care, and through the vulnerabilities the infrastructure creates.

As Zhang (2021) argues, investigating the origins of COVID-19 should not focus narrowly on identifying a single “patient zero,” “bat zero,” a cultural practice, or a particular spillover event. Rather, it must reveal the structural conditions of global capitalism that generate novel infectious diseases with pandemic potential. She urges us to look beyond biomedical, cultural and political factors to understand how science-driven agribusiness and human encroachment on animal habitats forced unexpected interactions between species. In much the same way, the hamster case is not simply an isolated incident of viral contamination, but a manifestation of the complex global flows inherent in the pet trade. Just as Zhang critiques science-driven agribusiness for disrupting ecosystems and accelerating zoonotic risks, the high-density breeding and globalised supply chains of the pet trade create ideal conditions for viral spillover. Economic pressures, insufficient surveillance, and lax trade regulations all converge to create an environment where pathogens can exploit systemic vulnerabilities.

In the name of biosecurity, the Hong Kong government ordered the culling of 2,000 hamsters. As with Denmark's mass killing of mink, this decision was justified as precautionary, but it reveals a deeper contradiction within biosecurity governance. On the one hand, governments have developed elaborate systems to enforce strict controls on human mobility through border closures, quarantine hotels, and mass testing. On the other hand, surveillance of animal trade and its role in pathogen circulation, which are well-known sites of zoonotic risk, remain limited and reactive. This uneven response exposes that biosecurity frameworks are structured around protecting humans first, while leaving the systems that generate animal–human vulnerabilities largely untouched. Such an approach avoids confronting how capitalist systems exploit interspecies entanglements and externalise risk onto marginalised human and non-human actors alike. Although hamsters provided critical data on viral mutability and cross-species transmission, when infection was detected, they were ultimately framed as biosecurity threats to be eliminated, but the response was not to address the trade practices that created the risk. This response reflects a crisis logic that prioritises short-term containment over long-term ecological thinking, reinforcing a pattern in which non-human lives are rendered expendable for the sake of precautionary human protection. In the next section, I examine this logic more closely, tracing how the framing of hamsters as viral vectors obscured the broader socio-ecological systems through which disease circulates, and what an alternative, relational model of biosecurity might look like.

Culling and Crisis Framing

As mentioned in the previous sections, Hong Kong has long maintained a rich tradition of ecological thought that acknowledges the interconnectedness of human and non-human life. However, when zoonotic threats emerge, this ecological sensibility often gives way to a crisis-driven, human-centred model of governance. The culling of hamsters during the COVID-19 pandemic serves as a clear example of how crisis framing shapes biosecurity responses, viewing animal health as a pure risk over the broader entanglements of animals, pathogens, and biotechnological interventions.

Crisis framing operates through a discourse of extreme urgency in which specific actions are presented as both necessary and inevitable (McHugh et al., 2021). This rhetoric simplifies complex issues into binary choices, often justifying drastic measures, such as the elimination of animals, and emphasising speculative epidemiological risks over robust scientific evidence. In crisis situations, decision-makers often face emerging uncertain evidence. Such evidence, such as that from epidemiological models in the context of COVID-19, further frames potential pandemics as emergencies, which then makes strict public health measures like lockdowns seem necessary (Rhodes & Lancaster, 2022). As Anderson (2021) argues, statistical modelling and simulation have evolved into what he terms "crisis technology," a reductive tool that enables rapid decision-making under uncertain biological constraints. In this framework, the intricate entanglements among humans, animals, and pathogens are reduced to isolated variables, reinforcing a short-term emergency response that privileges immediate containment over long-term, sustainable biosecurity strategies.

The hamster culling in Hong Kong is a clear example of crisis thinking. In January 2022, after investigations revealed infections at the pet warehouse and the infected pet shops, the Hong Kong government ordered a mass recall and culling of hamsters (Yen et al., 2022). The AFCD urged pet owners to surrender hamsters from affected batches for euthanasia, resulting in the killing of approximately 2,000 hamsters and other small mammals as a preventative measure. Government advisers contended that although alternative measures—such as quarantining and testing the animals—were conceivable, limited resources and logistical constraints made them impractical. Furthermore, as microbiologist Yuen Kwok-Yung explained, Hong Kong's low vaccination rate at the time raised fears that even a single superspreading event could result in hundreds of elderly deaths. Similarly, respiratory expert Hui Shu-Cheong justified culling by likening it to established practices in poultry farming, where entire flocks are destroyed in response to avian influenza outbreaks.

This line of reasoning, steeped in the logic of crisis framing, demonstrates how the urgency to act can lead to rapid-response measures that overlook the complex interdependencies among humans, animals, and pathogens. In moments of urgency, evidence and interventions are not separate but co-produced, shaped by the relational dynamics of the situation and the specific practices through which they are carried out (Rhodes & Lancaster, 2019). As Law and Moser (2012) observed, the need for interventions like culling is often more about context than about clear, conclusive data. Yet, the urgency imposed by crisis framing renders these measures seemingly indispensable. This reliance on crisis technology reflects an ideological commitment to reactionary governance, where immediate, decisive actions are valued more than adaptive strategies that acknowledge and integrate complex ecological interdependencies.

At its core, the outbreak reflects how animals, humans, and pathogens act on and respond to each other. Hamsters were not merely passive victims of culling but active participants in a biomedical system where they functioned as test subjects, virus carriers, and epidemiological threats. Their role in disease transmission was shaped not only by natural virology but also by human technological interventions, such as mass pet breeding, global trade, and experimental vaccine development. These processes made hamsters legible to scientific knowledge production while also rendering them disposable when that knowledge became politically inconvenient. The government's precautionary response, shaped by the uncertainty and scale of the threat, reveals a deeper logic in how zoonotic risks are managed. It mobilises animals when they serve epidemiological purposes but ejects them when they are seen as threats.

The very infrastructures designed to manage outbreaks, such as testing regimes and quarantine protocols, are often imagined as neutral tools. However, in practice, they reflect and reproduce human-centred assumptions. Animals are both inside and outside these systems. They are tested, traced, and monitored, but not granted the same stakes in life or health. In the end, so many hamsters and other small mammals were culled as a precautionary measure, illustrating a crisis mentality that leans heavily on elimination rather than integration, treating animals as obstacles, not participants, in the ecology of health. This approach privileges human safety through immediate, measurable outcomes while sidelining the broader ecological relations that influence disease transmission and the ethical implications of sacrificing non-human lives.

This biosecurity logic calls into question global health initiatives like One Health, which assert that human, animal, and ecosystem health are interconnected. While this framing is often celebrated for its integrative potential, critiques such as Hinchliffe (2022) warn that One Health can sometimes fall into reductionist traps by simplifying complex interactions into overly linear chains of transmission and control. In practice, many One Health programs, in seeking politically, geographically, and biologically viable solutions, end up endorsing an eradication logic. The hamster culling in Hong Kong exemplifies this logic: animal surveillance systems, developed since the 1970s primarily to protect human health, can collapse into rapid culling during a crisis. This pattern was also seen in avian influenza outbreaks and beyond.

What is also at stake here is the role of disease modelling, not only in formal epidemiological terms but as a broader mode of reasoning about risk. Even when no explicit model is invoked, governance decisions rely on imagined projections: speculative assumptions about which species pose a threat, how viruses move, and what interventions will most effectively contain them. These models simplified representations of complex systems used to justify action. In this case, hamsters are rendered high-risk carriers within a flattened logic of disease transmission that privileges immediate, quantifiable interventions. This logic narrows the field of vision, displacing attention from the infrastructural and environmental conditions that shape how pathogens circulate.

A more effective approach would move beyond placing blame on animals alone. It would interrogate the broader conditions that produce and intensify zoonotic vulnerability, including global trade flows, high-density pet breeding and urban design.

Addressing these broader vulnerabilities and reframing disease as a relational and ecological process can help public health strategies balance the need for immediate containment with long-term resilience and sustainability. Instead of treating disease control as a means to achieve a definitive, disease-free state, shifting toward a disease ecology perspective emphasises that health is a dynamic process defined by ongoing interactions among hosts, environments, and pathogens. This relational logic challenges traditional eradication models and calls for a shift to biosecurity strategies that critically assess and address the underlying structural forces in a way that is both ecologically sound and ethically responsible. While global initiatives are valuable in naming these interconnections, they often stop short of addressing the epistemic and political assumptions embedded in the infrastructures and models they deploy. A more critical orientation that is attuned to the relational, situated, and uncertain nature of health would require confronting the limits of existing biosecurity regimes and imagining alternatives grounded not in control and eradication but in care, coexistence, and structural change.

Conclusion

This paper has examined the role of animals in biosecurity governance through the case of hamster culling in Hong Kong, using it to reflect on broader tensions within contemporary zoonotic preparedness. While animals are often framed as passive carriers of disease and as threats to be monitored, managed, or eliminated, their presence in biosecurity narratives reveals much more. As relational actors, animals make visible the multispecies entanglements that structure disease emergence and transmission. Yet dominant responses, like culling, reduce these entanglements to isolated biological risks, obscuring the ecological, infrastructural, and political contexts in which outbreaks occur.

Framed within a logic of crisis, the culling of hamsters appears as a swift and necessary action. Yet the response exposes the epistemic and infrastructural logics that underpin zoonotic governance: a reliance on models (both statistical and informal) that render certain animals as threats while backgrounding the structural drivers of vulnerability, like global trade and pet economies. These modelling practices, though often unspoken, are performative. They guide decisions under uncertainty, delineate what counts as evidence, and make certain lives expendable.

This case also troubles the promises of the integrated public health approaches, such as One Health. While the framework claims to integrate human, animal, and ecosystem health, it often remains technocratic, driven by epidemiological models and policy instruments that reaffirm anthropocentric priorities. As Marian Koopman, a Dutch Virologist, notes, animals like mink and hamsters become epidemiological afterthoughts—detected only after viral transmission is confirmed in humans. Similarly, as Anderson (2021) and Caduff (2020) argue, pandemic preparedness discourses have foregrounded abstract metrics like R_0, which can obscure social and ecological complexities. Even in places like Hong Kong, which has long been viewed as a sentinel post for emerging diseases (Keck, 2020), biosecurity remains tethered to rapid-response infrastructures that privilege measurable, contained interventions over long-term, ecological thinking.

To move forward, biosecurity strategies must move beyond blame and containment toward a more relational understanding of health that acknowledges the co-constitutive roles of humans, animals, and environments. Disease ecology offers one such orientation, emphasising that health is not a fixed endpoint but an ongoing negotiation shaped by multi-species interactions and structural conditions. A truly integrated approach would not only share data across disciplines or include animals in surveillance systems, but also reckon with the uneven distributions of risk, responsibility, and care across species boundaries. The important task is not simply to critique the failures of existing frameworks but to offer alternative imaginaries. This means questioning what counts as a model, how decisions are made under uncertainty, and whose lives are rendered sacrificial in the name of public health. The hamster case invites us to imagine a different kind of preparedness that is grounded not in eradication and control, but in coexistence, structural transformation, and ethical multispecies relations. In a time when crises are no longer exceptional but ongoing, such reconfigurations are not only timely but urgently necessary.

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