
PREPARING INDONESIA: H5N1 INFLUENZA THROUGH THE LENS OF GLOBAL HEALTH

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Why Does Global Health Matter?

The Health of the World Knows No Borders

By working with others to prepare for a potential pandemic like avian influenza, we are safeguarding the health of people around the world and in turn protecting the health of those in the United States.²

There is a danger that all this new energy for global health will result in it becoming an activity developed through the lens of rich countries, ostensibly for the benefit of poor countries, but without the key ingredients of a mutually agreed, collaborative endeavor.³

Global health is a recent term, barely more than a decade old, used to express the way that human health relates to processes of transnationalism and globalization. The framing of the concept global health represents an attempt to create distance between the colonial discourse of tropical medicine and hygiene, and contemporary globalized practices of health education, care, and intervention. Global health is also differentiated from *international health*, a mid-twentieth-century term that placed the insights of tropical medicine within the conceptual, policy, and regulatory context of international

¹ I wish to thank Eric Tagliacozzo, Mochamad Indrawan, the staff of NAMRU-2, and an anonymous reviewer for *Indonesia* for their help and insightful comments. Mistakes and omissions are all my own.

² The Global Health Council, *Why Does Global Health Matter?*, at http://www.globalhealth.org/view_top.php?id=25, accessed on April 19, 2010.

³ Sarah Macfarlane, Marian Jacobs, and Ephata Kaaya, "In the Name of Global Health: Trends in Academic Institutions," *Journal of Public Health Policy* 29 (2008): 383–401.

development and also incorporated perspectives from public health.⁴ Global health, as measured by initiatives, programs, and statements made in its name, is an overwhelmingly North American initiative, but it has also been taken up by multilateral institutions, like the World Health Organization (WHO), that receive large amounts of support from the United States and Canada. While the concept of global health is set firmly against *health disparities*, it is also encompassed by an interest in protecting “society” against threats, like AIDS and tuberculosis, that don’t respect national borders but seem to emanate from, and are most pernicious in, the “developing” world. In its concern for security and border-crossing disease that threatens the health of individual, primarily “First-World,” nations, it sustains hierarchies held over from the previous rubrics of tropical medicine and international health noted above.⁵

At the turn of the twenty-first century, precisely as the global health concept was coming into being, a new strain of type A influenza virus, named H5N1 for its five Hemagglutinin and one Neuraminidase receptors, appeared in Asia. H5N1 was one of the first (along with SARS, Severe Acute Respiratory Syndrome), and easily the most extensive and enduring, emerging diseases to be approached as a matter for global health. Framing the disease as a problem relevant to global health meant that the H5N1 intervention combined a concern for healthcare disparities with concerns for cross-border security, and these contradictory goals frequently came into conflict. In this article, I will be concerned with how the international effort to stop the spread of H5N1 was carried out in Indonesia. Through the transforming and transformative rationalities of the global health paradigm, Indonesia was made ready to confront an emerging disease that appeared to threaten both its domestic population and international security.

H5N1 as a Problem for Global Health

In 2003, poultry began dying in Indonesia of the H5N1 influenza virus, and the Indonesian Department of Agriculture covered it up. The outbreak started in commercial poultry production facilities, spread to backyard poultry, and ultimately affected humans, but pressure from poultry industry representatives on politicians dampened the national response.⁶ It took six months after the first poultry outbreaks for Indonesia to acknowledge the disease had struck in the country, and two years, up to the time when the first human deaths occurred, for the country to develop a comprehensive response to the disease. This meant that, initially, appropriate culling measures were not followed, the global health community was not involved in testing or responding to the outbreak, and the international community accused Indonesia of putting the world’s health at risk.⁷ It was the heroic action on the part of a handful of

⁴ Ibid., pp. 384–85.

⁵ Ibid., pp. 389.

⁶ Allan Sipress, “On the Front Lines of Asian Battle Against Bird Flu,” *Washington Post*, May 22, 2005, p. A1.

⁷ Allan Sipress, “UN Urging Indonesia to Take Stronger Action Against Bird Flu,” *Washington Post*, October 23, 2005; and Richard Holbrooke and Laurie Garrett, “‘Sovereignty’ that Risks Global Health,” *Washington Post*, August 10, 2008, p. A19.

scientists—Indonesia’s former Director of Animal Health, Dr. Tri Satya Putri Naipospos, who first spoke to the press, and professor of microbiology Dr. Chairul Nidom, who first detected the virus in Indonesian chickens and made his findings public—that brought the outbreak into the open and forced Indonesia to respond.⁸

It might have been predicted that this highly pathogenic, emerging disease was on its way across the South China Sea to Indonesia. H5N1, an avian influenza, is a relatively new disease in humans, as it jumped the species barrier from poultry to humans only in the mid-1990s, when an outbreak struck Hong Kong, killing first a three-year-old boy and then more than a dozen others. The Hong Kong outbreak was broken by a massive poultry cull and a blockade on imports from Guangdong, mainland China, the apparent source of the virus. But in 2003, poultry outbreaks of the disease began appearing across Asia—first in Korea, Thailand, then Vietnam—with rarer human cases following close behind. Once these cases were acknowledged, it quickly became clear to observers like Ambassador John Lange, US Special Representative on Avian and Pandemic Influenza, that Indonesia had the most human cases and was the likely site, “ground zero” in his words, for a deadly global pandemic outbreak.⁹ Should the virus mutate and gain the transmissibility of the seasonal flu, the consequences would be devastating.¹⁰

In the middle part of the ‘00 decade, the H5N1 Influenza virus was understood by the international community to be an imminent worldwide global health threat. While the disease proceeded to tear through poultry flocks, making its way west from Southeast Asia to Africa and Europe, becoming the worst avian pandemic in known history, human cases were limited but also deeply troubling. For one thing, the human mortality rate could be as high as 80 percent in some instances, and the disease was virtually untreatable. When infected with H5N1, the human body seems to dissolve from the inside out, as lungs fill with fluid and the patient slowly drowns. Preparations for such a pandemic, and the desire to stop it before it materialized, initiated a massive international response, one that eclipsed other scientific, healthcare, and aid agendas, and whose budget rapidly outstripped funding available for ongoing medical, scientific, and development efforts.

The spread of H5N1 conjured specters of the largely forgotten 1918 influenza pandemic, which killed, on average, only 4 percent of those individuals who were infected if they had previous exposure to the influenza virus and a functioning immune system.¹¹ Even then, the 1918 event caused more deaths globally than the total casualties, civilian and military, of World War I, while in Indonesia alone the virus is

⁸ Allan Sipress, “Indonesia Neglected Bird Flu Until Too Late, Experts Say” *Washington Post*, October 20, 2005, p. A1.

⁹ John Lange, “Avian and Pandemic Influenza: The US International Strategy” *The State Department at Work*, eJournal USA, February 2007, no longer online.

¹⁰ Influenza viruses are rapidly mutating RNA viruses, and this ability to mutate increases the potential for a pandemic strain of influenza virus to evolve. There are two main ways that this could occur. The first is through “reassortment,” which could happen if a single host were co-infected with H5N1 and a highly transmissible virus at the same time. The second is through “mutation,” the evolution of a single virus into a more transmissible form.

¹¹ John M. Barry, *The Great Influenza: The Epic Story of the Deadliest Plague in History* (New York, NY: Penguin Books, 2004), pp. 360–65.

likely to have caused a million and a half deaths.¹² The 1918 pandemic killed more young, healthy adults aged fifteen to thirty-four than it did children or elderly persons, suggesting to researchers that death resulted from the overreaction of a healthy adult immune system, or a “cytokine storm.” In 2005, researchers reconstructed the genome of the 1918 strain, an H1N1 virus, from human remains buried in the Arctic permafrost, demonstrating that the 1918 flu had been an avian virus that had adapted itself to humans.¹³

International organizations, such as the WHO, the World Organisation for Animal Health (still referred to as the OIE, formerly Office International des Epizooties), the Food and Agriculture Organization (FAO), along with US institutions like the Center for Disease Control (CDC) and the United States Agency for International Development (USAID), put pandemic preparedness squarely in the center of their programs. Affected countries were expected to work closely with these institutions to prevent a worldwide health catastrophe. The organizations developed scenarios outlining their potential responses to outbreaks, demonstrating that they planned to intervene through disease surveillance, biosecurity education, sample identification, and vaccine preparation, among other ways. Here, in the ideal scenario of just one of these organizations, the WHO, is an example of how things were supposed to work when assistance is extended to an affected country:

In January 2004, WHO officials were understandably on high alert for any signs that H5N1 might again cross the species barrier to cause disease in humans. On 5 January, Vietnamese health authorities informed the WHO office in Hanoi of an unusual cluster of severe respiratory disease in 11 previously healthy children hospitalized in Hanoi. Of these patients, 7 had died and 2 were in critical condition. Treatment with antibiotics produced no response, and a viral cause was suspected. Infection with the SARS virus was considered but did not seem likely. For unknown reasons, SARS tended to spare children, rarely causing severe illness, and was never considered a pediatric disease. WHO was asked to assist in the Hanoi investigation, and arrangements were made for testing of patient specimens at WHO reference laboratories.¹⁴

The key elements of this scenario were: a biological event (H5N1 jumped the species barrier and infected humans); case identification (engaging existing hospital-level surveillance mechanisms to evaluate an illness with symptoms resembling those of influenza); notification of international authorities (the WHO); and technical intervention by the global health community (specimens tested at WHO reference labs). Intervention was meant to analyze and evaluate the disease and its trajectory as it related to an entire population, and was not intended to function on behalf of those individuals afflicted. When Indonesia initially failed to report its cases, this system

¹² Collin Brown, “The Influenza Pandemic of 1918 in Indonesia,” in *Death and Disease in Southeast Asia: Explorations in Social, Medical, and Demographic History*, ed. Norman Owen (Oxford: Oxford University Press, 1987), pp. 235–56.

¹³ Jeffrey Toubenberger et al., “Characterization of the 1918 Influenza Virus Polymerase Genes,” *Nature* 437 (October 6, 2005): 889–93.

¹⁴ World Health Organization, *Avian Influenza: Assessing the Pandemic Threat* (WHO: Global Influenza Program Publication, 2005).

could not work, and Indonesia's status as an "attentive," "capable," and "prepared" nation was called into question.

H5N1 as Event and Problem Domain

Rather than accepting at face value Indonesia's apparent failures and the situation as I have outlined it from the perspective of the international global health community—as a sign of the country's irrationality, lack of capacity, or underdevelopment—I examine the emergence of H5N1 avian influenza by considering it as a "problematization." A problematization, as defined by Foucault, is characterized by an occurrence—in this case, H5N1 jumping the species barrier to become a fatal human disease—that creates uncertainty and induces changes in our ways of understanding, acting, and relating. The importance of looking at social change in this way is that it activates the potentialities of a given situation. Different perspectives and solutions potentially exist—we are not dealing with an outcome predicated on known historical or structural constraints—and yet the scope of what is true and what is false is not unlimited.¹⁵ In combination, the massive international intervention in Indonesia, and questions over Indonesia's response to the disease, indicate a problem domain amenable to thought, which requires intervention, and may potentially induce change.

From almost any perspective, the status of Indonesia as a country capable of responding effectively to the outbreak was at stake. Moreover, the force of the global health response was massive, and any institution connected to the issue of H5N1 needed to contend with the tsunami of funding and focused attention devoted to the problem. This problematic situation, then, had two overarching aspects, each focused on a question: 1) was Indonesia sufficiently attentive to and prepared for the present outbreak and for a potential pandemic?; and 2) how would Indonesian government and private-sector institutions deal with the overwhelming attention and funding directed toward influenza? Answers to these questions, as I have indicated, are not objects but processes. Moreover, they occurred within a field of intervention—a space constituted by vital matter, discourse, politics where a series of events unfold—that Foucault has called a *milieu*.¹⁶ A milieu is both a natural and social medium, a set of overall constraints and effects that bear upon the problematic situation. In the case of the H5N1 outbreak in Indonesia, the contemporary milieu consisted of the paradigms of global health and security, as well as Indonesian concerns for sovereignty and scientific and economic development.

Foucault's concept of milieu, outlined in *Security, Territory, Population*, is set within his own wider exploration of the problems of security, and the relationship of security to population. The problem space of *security*, within this discussion, responds to the question: "what must be done to meet something that is not exactly known in advance?"¹⁷ Andrew Lakoff and Stephen Collier interpret global health as a problem

¹⁵ See Paul Rabinow, "Midst Anthropology's Problems," *Cultural Anthropology* 17,2 (2002):135–49. For Foucault, it is important that this type of analysis produces "diagnosis" rather than a direct move to intervention or repair. See Michel Foucault, *Security, Territory, Population* (New York, NY: Palgrave/MacMillan, 2007), pp. 3–4.

¹⁶ Foucault, *Security, Territory, Population*, pp. 21–22.

¹⁷ *Ibid.*, p. 19.

space of security, and identify a moment in time and a set of actions that resulted in problems of disease being framed within a new normative rationality: *preparedness* rather than *prevention*, or, more specifically, *biosecurity* rather than *public health*. The field of biosecurity engages new practices and knowledge formations designed to understand and manage both disease and security in novel ways. Biosecurity, as a project or field, is a response to such challenges as weakened public health systems, the “return of the microbe” in the form of new frightening diseases like SARS and West Nile virus, not to mention the ongoing AIDS epidemic. It also responds to such events as the bombing of the World Trade Center on September 11, and the posting of letters containing deadly anthrax bacteria in the United States in 2001. Following each of these events, the public’s overall sense of being under threat and needing to take preventive action increased, although Lakoff and Collier make it clear that this change in the normative understanding of *threat* has post-WWII roots much older than the contemporary events composed and carried out as acts of terror.

Biosecurity operates within the context of three mechanisms of power Foucault has described at length: *sovereignty*, or the juridical mechanism; *surveillance*, or the disciplinary mechanism; and *optimization*, or the mechanism of security. This last, the mechanism (or apparatus) of security is especially operative in pandemic preparedness, since the concept of preparing for something not known in advance, but whose parameters are modeled by those seeking to develop contingency plans, is characteristic of modern epidemic management. Further, *optimization*, as a form of biopower (control over the vital aspects of populations), takes the biological or species characteristics of a phenomenon (like disease) into account, and attempts to set such a phenomenon within a series of probable events that can then be compensated for. The apparatus of security both calculates cost (is instrumental) and sets a phenomenon within a range of acceptability (is optimal).

Foucault makes it clear that these mechanisms are not historically progressive. Rather,

In reality you have a series of complex edifices in which, of course, the techniques themselves change and are perfected, or anyway become more complicated, but in which what above all changes is the dominant characteristic, or more exactly, the system of correlation between juridico-legal mechanisms, disciplinary mechanisms, and mechanisms of security.¹⁸

If we consider H5N1 avian influenza and its emergence in Indonesia as an event and a problem domain operating within a milieu, what becomes noteworthy is how this *system of correlation* differs among institutions and agents that are pulled into the problematization. What is clear from the start is that an outbreak of avian influenza, as an event, is neither a singular phenomenon nor simply defined by one’s perspective and therefore dependant upon one’s identity as, let’s say, either an Indonesian or an American.

A brief example is illustrative. When the Indonesian government was challenged to outline its anticipated response to the epidemic and explain how it would accommodate the flows of incoming funds, it answered by establishing the Indonesian

¹⁸ Foucault, *Security, Territory, Population*, p. 8.

National Committee on Avian Influenza Control and Pandemic Influenza Preparedness (Komnas FBPI, Komite Nasional Pengendalian Flu Burung dan Kesiapsiagaan Menghadapi Pandemi Influenza). Komnas FBPI was funded by the government of Indonesia, USAID, UNICEF, CIDA (Canadian International Development Agency), JICA (Japan International Cooperation Agency), and the World Bank, and one of its first actions was to develop Indonesia's "National Strategic Plan for Avian Influenza Control and Pandemic Preparedness," a response to the international mandate that every country have "a preparedness plan."¹⁹ Operating in the *domain of sovereignty* the committee established the importance of avian influenza on par with Human Rights and the Rights of the Child, issues also represented by Indonesian "national committees." Operating in the *domain of discipline*—the sphere of surveillance, correction, and individuation—the state functioned both as a kind of "self," subjected to surveillance by the global health community and urged to improve, and, also, as a force of correction, as it informed the Indonesian public about ways to prevent human and animal outbreaks. Finally, operating in the *domain of optimization*, the national strategic plan acknowledged the nature of the virus's constantly mutating genome by focusing on strategies that would help identify outbreaks of this protean virus in poultry markets and in wild bird populations—i.e., surveillance.

In the international community, *preparedness* had become an ethical attribute as well as a technology of rule. The seriousness conveyed by Indonesia's establishment of a "national committee" demonstrated the government's attentiveness to the problem of H5N1. The National Committee worked as a coordinating body, mapping such things as the distribution of medical, epidemiological, and veterinary expertise; domestic and international funding resources; media reporting; and vaccine sources and availability. It coordinated simulation exercises to prepare government departments and hospitals to work together in the event H5N1 became a full-scale human pandemic. Also, it kept track of the relative numbers of cases in humans versus animals, identifying unaddressed issues in each sector. These *preparedness practices* were intended to protect Indonesia from harm, but also, in effect, to stop the problem "there" (in Indonesia) before it could get "here" (to donor countries).

In the rest of this paper, I will proceed in the manner illustrated above. That is, I will use the tools of an anthropology of reason to examine the balance of sovereignty, surveillance, and optimization in the work of a series of organizational actors—the US Naval Medical Research Unit II (NAMRU-2), the Indonesian Ministry of Health (MoH), the United Nations Food and Agriculture Organization (FAO), and the Indonesian Ornithologist's Union (IdOU, Perhimpunan Ornotolog Indonesia)—that were pulled in and responded to the problematic situation of the H5N1 influenza virus outbreak in Indonesia in the middle of the decade, 2000–10.²⁰ By comparing institutions

¹⁹ According to the World Bank, "Avian and Human Influenza Facility," "All countries, regardless of their level of risk, need to prepare integrated country action plans for human and animal health as well as for other sectors engaged in the response for avian and human influenza. Country action plans should identify clear and common objectives across sectors, with associated results, outcomes and costs, to which all sectors can contribute. They may also need to provide for the development of policy, legislation, and related strategy work to support the interventions identified." See <http://siteresources.worldbank.org/INTTOPAVIFLU/Resources/AHI.Facility.Rocio.May07.pdf>

²⁰ This research is based on two years of field and archival research in Jakarta and Yogyakarta, Indonesia during 2006 and 2008–10.

and their methods and apparatuses, we will uncover and be able to study the tensions that arose between efforts to address health disparities and efforts to protect “First World” biosecurity.

Medical Humanitarianism in a Naval Laboratory: NAMRU-2

A *national preparedness plan* was only one type of response that governments could implement when confronting the pandemic potential of H5N1; another was *surveillance*. The influenza virus, in both humans and animals, shares symptoms with many other diseases, and the entire cluster of these symptoms defines an “Influenza-like Illness” (ILI). In Indonesia, the term “flu” itself is a popular way to refer to the common cold, and the two often aren’t well distinguished, even in clinical practice. Moreover, once a person’s illness has been identified as influenza, it is necessary to know what type of influenza one is dealing with—is it an ordinary seasonal variety or the deadly H5N1? Even within one subtype, like H5N1, there are different clades, or varieties of the subtype, with different attributes, such as greater or lesser virulence. If one is looking to identify the emergence of a pandemic, surveillance of influenza genotypes becomes a potential tool for understanding viral evolution on the ground.

At the start of the Indonesian outbreak in 2003, Indonesia did not have a molecular biology laboratory capable of identifying the composition of biological samples suspected to be H5N1 influenza virus. The US Naval Medical Research Unit-2, a medical research arm of the United States Navy, operated a regional “reference lab” for influenza virus testing in Indonesia. Located in Jakarta, NAMRU-2 provided support to the Indonesian Ministry of Health for, among other things, studies of “Influenza-like Illness” and case investigations, and it had maintained an ongoing program of ILI surveillance since 1999. NAMRU-2 had the capability to sequence the genomes of the H5N1 influenza virus using real-time RT-PCR (reverse transcription polymerase chain reaction) screening before culturing, and it was the only in-country lab with the capability to work up both human and animal samples to confirm or deny the presence of the virus.²¹

The study of tropical medicine has never been a highly developed research practice in the United States, and, consequently, American tropical medicine research has been supported overwhelmingly by the US Department of Defense (DOD). As Warwick Anderson writes, “the military legacy, of course, is not surprising: as we have seen, the links between the army and colonial medicine were lasting, intense, and multiform.”²² Likewise, Nicholas King demonstrates that the interests of security and commerce are deeply sedimented in US public health.²³ Still cognizant of the impact of military deaths due to influenza in WWI, the US military has played a historic role in influenza

²¹ Col. (Ret.) Jose L. Sanchez, “Global Influenza Surveillance Efforts” (Department of Defense Global Emerging Infections Surveillance and Response), Powerpoint presentation to DoD/ CDC Working Group, January 7, 2007.

²² Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham, NC: Duke University Press, 2006), p. 231.

²³ Nicholas King, “Security, Disease, Commerce: Ideologies of Postcolonial Global Health,” *Social Studies of Science* 32,5/6 (2002): 763–89.

surveillance and vaccine development since WWII,²⁴ and NAMRU-2's participation in influenza surveillance and tropical medicine research in Indonesia was not initiated in response to the H5N1 outbreak.

The NAMRU-2 facility was developed in cooperation with the Rockefeller Foundation as a research unit on the Island of Guam during World War II. One of a series of research units that covered different world regions, NAMRU-2 moved several times after its start in Guam, tracking Cold War developments in the so-called Pacific Theater. It was located in Taiwan in 1955, and in 1979 moved to Manila. In 1970, a detachment of the main unit opened in Jakarta to investigate infectious diseases of importance to both the US government and to Indonesia, and in 1990 the parent unit of NAMRU-2 was moved to Jakarta. Until its closure in 2010, NAMRU-2 had five research divisions: the parasitic diseases program; laboratory animal medicine; the viral diseases program; the bacterial diseases program; and the emerging diseases program.

NAMRU-2 describes its mission as supporting "American medical research interests in the Pacific Theater and advanc[ing] US diplomacy in the region by studying infectious diseases of critical public health importance to the United States, Indonesia, and other regional partners."²⁵ As part of the Department of Defense Global Emerging Infections System (DoD-GEIS, a Clinton-era initiative), NAMRU-2 is responsible for basic and applied research, public health surveillance, capacity building in the host countries (including training scientists and developing laboratory capabilities), and providing assistance during humanitarian emergencies at the request of the host country.²⁶

A typical question of interest to the NAMRU-2 biologists I spoke with in Jakarta is this: Why does resistance to anti-malaria drugs develop in Southeast Asia and not, say, in Africa, where there is more malaria? Or in other words, how is it that *less* malaria can translate into *more* resistance?²⁷ Before H5N1, NAMRU-2's research focused not on epidemics, but on what, as Foucault writes,

... might broadly be called "endemics," or in other words, the form, nature, extension, duration, and intensity of the illness prevalent in a population. These were illnesses that were difficult to eradicate and that were not regarded as epidemics that caused more frequent deaths, but as permanent factors which—

²⁴ National Academy of Sciences Review Committee for the Assessment of DoD-GEIS Influenza Surveillance and Response Programs (NAS), *Review of the DoD-GEIS Programs: Strengthening Influenza Surveillance and Response* (Washington, DC: National Academies Press, 2007).

²⁵ See <http://www.geis.fhp.osd.mil/GEIS/Training/NAMRU-2asp.asp>, last accessed December, 2008.

²⁶ NAS, *Review of DoD-Geis Programs*, p. 49.

²⁷ One possible answer looks like this: In Africa, everyone carries some malaria load due to the high prevalence of the disease. For this reason, malaria often doesn't create severe symptoms—small boys with high parasite loads can still run around playing soccer. Therefore, people don't get treated and, consequently, they don't get the kind of erratic treatment that produces drug-resistant strains of malaria. In Southeast Asia, on the other hand, there is a lower incidence rate. People who are infected feel sick, they get treated, and treatment is partial, and with poor quality medicines. This is how *less* malaria can translate into more, and more virulent, drug-resistant forms. But this is only a hypothesis, not the simple historical answer. The historical answer would be that quinine was put in table salt in Thailand, provoking the development of resistance there first. New drugs were then introduced to Southeast Asia, so resistance developed throughout the region. But the simple historical answer does not explain all the permutations of resistance in Southeast Asia.

and that is how they were dealt with—sapped the population's strength, shortened the working week, wasted energy, and cost money, both because they led to a fall in production and because treating them was expensive. In a word, illness as phenomena affecting population.²⁸

It is, obviously, reasonable to assume that there is self interest involved on the part of the United States in its research facilities, and the "population" whose strength was sapped and workweek shortened, who most concerned the military medical staff, was made up of US troops and, to a lesser extent, the diplomatic and expatriate corps. Militaries represent the apparatus of force relations par excellence, yet in this case the US military did not simply engage in an extension of force (the apparatus of sovereignty). Instead, by making itself responsible to the needs of the Indonesian healthcare community and offering emergency assistance to Indonesia, NAMRU-2 increasingly, in the years leading up to the H5N1 outbreak, adopted a rationality Redfield describes as "medical humanitarianism":

For the humanitarian actor, the problem of securing populations and vital infrastructure is not primarily a matter of self interest or defensive strategy. Rather, it involves a concern for others, even very distant others, and their continuing welfare.²⁹

Redfield identifies how Doctors Without Borders, an NGO that intervenes in humanitarian crises, borrowed from military logistics to form a rapidly deployable "humanitarian kit" with easily accessible and interchangeable parts, to be deployed for humanitarian relief. In emphasizing "joint activities [that] include both collaborative research on diseases of public health significance and disaster relief in the wake of the 2004 Sumatra tsunami and the 2005 Central Java earthquake," NAMRU-2 had, by the decade of 2000–10, borrowed the rationality of "humanitarianism" from the genre of Doctors Without Borders.³⁰

Then, in 2006, the US Congress granted US\$39 million to DoD–GEIS for the purpose of increasing and upgrading worldwide influenza surveillance, improving international (including host country) laboratory capacity, and establishing networks of participating labs.³¹ By 2006–07, two-thirds of the NAMRU-2 budget had been redirected towards influenza surveillance, and even the improved laboratory capacity was consumed by a series of research projects related to the problems posed by H5N1.³² This work built on the ILI surveys begun in 1999 with support from the CDC, USAID, and DoD–GEIS. The supplemental funding was used to expand surveillance to

²⁸ Michel Foucault, *Society Must Be Defended* (New York, NY: Picador, 2003), pp. 243–44.

²⁹ Peter Redfield, "Vital Mobility and the Humanitarian Kit," in *Biosecurity Interventions*, pp. 147–71.

³⁰ See www.med.navy.mil/sites/nmrc/Pages/namru_2.htm (accessed February 9, 2010). Military humanitarianism is, of course, at once an oxymoron, an ideology, and part of a larger political strategy, and unconvincing at many levels. At the same time, to understand precisely what was going on within NAMRU-2, it is important to observe the public rationality employed, which was also the subjective mode of rationality of many actors involved.

³¹ NAS, *Review of DoD-Geis Programs*, p. 49.

³² The site visit team was told that single-year funds received at the end of a fiscal year are very difficult to use effectively. For example, a large portion of the fiscal year 2007 salaries for scientific personnel were supposed to be funded by DoD–GEIS, but by early fiscal year 2007 no (or limited) DoD–GEIS funding had been received. This indicates NAMRU-2 itself was struggling to absorb the "surge" in influenza funding.

incorporate the tracking of influenza cases in migratory birds, the passive surveillance of Indonesian citizens afflicted with ILI alone, or with diarrhea, and improved tracking of human influenza cases in Laos and Cambodia. It was also used to purchase new equipment and reagents, and to train Indonesian government scientists at the University of Iowa, among other places. Multiplex RT-PCR analysis, a screening process in which more than twenty individual pathogens could be identified simultaneously (thereby making it possible to identify the co-occurrence of pathogens), was costing US\$5,262 a day, or one million dollars per year, at the rate of one screen each day.³³

A new technical question, driven by global health concerns, then emerged: how could Indonesia, using both NAMRU-2 and MoH facilities, “scale up” this screening should a pandemic occur? How many samples could be run in a day? Let us return for a moment to the idea of a problematization as an event that creates uncertainty and induces changes in our ways of understanding, acting, and relating, and consider, in this context, a report by the National Academy of Sciences on the DoD-GEIS program. This report describes one institutional effect of the increase in funding for, and emphasis on, screening and surveillance at NAMRU-2:

Over the years, the overseas laboratories have expanded their roles in host countries and in the surrounding geographic regions to include training activities and collaborative studies of pathogens of importance to the general public, but taking on a surveillance role, such as the AI/PI surveillance program, has been a significant departure from the historical research orientation.³⁴

Influenza surveillance had turned NAMRU-2’s highly educated MDs and PhDs into technicians and statisticians responsible for overseeing the production of data on the status of the outbreak. This data took the form of genetic code developed out of a technical capacity to screen, rather than involving analyses grounded in epidemiological hypotheses based on life sciences research. One could imagine this transition would not be entirely well received by the doctors and scientists involved, and I had the clear impression that a few of the staff believed their medical mission had been hijacked by a US administration “gone crazy” with concerns for biosecurity after September 11, 2001.³⁵

As noted above, while a military facility would seem naturally to operate through the mechanism of “sovereignty,” what the H5N1 event effected was a shift in the political apparatus from “discipline” to “optimization.” Whereas staff involved in malaria research sought to discover how the behaviors of individual Southeast Asians, and aspects of their history, might facilitate the evolution of drug-resistant microbes,

³³ NAS, *Review of DoD-Geis Programs*, p. 87.

³⁴ *Ibid.*, p. 30.

³⁵ One reviewer observed that this would mean the scientists were wearing their “scientist hat” more often than their “military hat.” In my interviews at NAMRU-2, I became convinced this was, in fact, the case. For one thing, the scientists I spoke with each had a depth of biological and medical knowledge that could engage any one person full time in terms of training and practice. None of these people needed to develop additional areas of expertise in order to keep busy. It is also clear that the US government actually wants to collect and use the scientific knowledge that NAMRU-2 staff are pursuing, so the self-interest at play here is obvious. And finally, while the US undoubtedly gathers intelligence on Indonesia, it would be easier simply to hire a “spy” rather than a medical doctor or PhD microbiologist to do this work. In sum, the military hat and the scientist hat, in this case, are the same thing.

the effort to “scale up” influenza screening was intended to intervene at the level of the general population (by collecting biological samples) through constant surveillance of the phenomenon in question,

The mechanisms introduced by biopolitics include forecasts, statistical estimates, and overall measures. And their purpose is not to modify any given phenomenon as such, or to modify a given individual insofar as he is an individual, but, essentially, to intervene at the level at which these general phenomena are determined, to intervene at the level of their generality.³⁶

These political formations are not those imagined by either the well-reasoned critics or the imaginative conspiracy theorists who are skeptical of NAMRU-2’s presence in Indonesia. On the other hand, it is understandable that the introduction of a US military medical presence might not sit well with host countries, nor would the rationality of “medical humanitarianism” be convincing to many. I will now examine what the global health influenza intervention meant to some of those skeptics, including the head of Indonesia’s own Ministry of Health.

Viral Sovereignty: The Indonesian Ministry of Health

It was November 13, 2009, and the annual Hajj pilgrimage was underway. A brief article discussing flu preparations for those undertaking the Hajj appeared in *Kompas*, Indonesia’s most respected national newspaper, portraying the seasonal flu through a singular Indonesian perspective:

PT BioFarma, beginning this year, will fulfill the flu vaccine needs of Indonesian Hajj goers. For this Hajj season, 240,000 doses of seasonal flu vaccine have been distributed to all participants. The Director of PT BioFarma, Iskandar, said Thursday in Bandung West Java that the health of Hajj goers had to be given serious attention because the climate of Saudi Arabia is different than Indonesia’s, and therefore Hajj participants are vulnerable to becoming sick with seasonal flu.³⁷

Vaccines are a key technology in influenza intervention, and Indonesia’s ability to produce, rather than import, influenza vaccine, especially for H5N1, has been an important symbol of Indonesian scientific independence since the beginning of the avian influenza crisis. PT BioFarma, the nationally owned company tasked with producing vaccine for routine immunizations in Indonesia, took on the new job of producing an annual human flu vaccine at the request of Indonesia’s Minister of Health, Dr. Siti Fadilah Supari. The effort, a collaboration between PT Biofarma, the Ministry of Health, and Airlangga University’s Institute of Tropical Diseases in Surabaya, also necessitated an international partnership with Kobe University of Japan.

The *Kompas* story explained that, while in 2008 Indonesia had to import all its seasonal flu vaccine, and in 2009 it imported a portion of the necessary supply, by the following year all vaccine for Hajj pilgrims would be “domestically” produced.

³⁶ Foucault, *Security, Territory, Population*, p. 246.

³⁷ “Indonesia to Fulfill Flu Vaccine Needs of Hajj Goers,” *Kompas*, November 13, 2009.

Iskandar's emphasis on independent production is indicative of the high value that Indonesia places on sovereignty (*kedaulatan*) in the scientific realm. While Director Iskandar emphasized that the vaccine would be independently produced (*secara mandiri*) in Indonesia, he admitted that the raw materials for the vaccine had been imported from Japan, and that making the vaccine involves "working together" (*bekerja sama*) with Japanese experts.

Although a portion of both materials and expertise were imported from abroad, the story does highlight the critical role played by the physical virus itself, which was under Indonesian control. Influenza virus is an RNA virus, and RNA viruses possess highly unstable genomes, so unstable, in fact, that different types of influenza virus are sometimes called "quasi-species." Flu vaccines must be recalibrated annually because the genome changes so rapidly that a vaccine that is effective one year will not be so the next. Annual flu vaccines are developed through a complex system, coordinated by the WHO, that facilitates the shared exchange of samples. With host country approval, participating labs, like NAMRU-2, send samples to participating WHO centers (in this case, the CDC) for confirmation and analysis. A new vaccine can be generated based upon an analysis of what influenza strains are circulating globally at any given time. Before the H5N1 event, NAMRU-2 shared viral isolates with the CDC (representing WHO), which then used them to make their genetic sequences public thorough GenBank, to recommend strains for the annual vaccine, and to make the isolates available to vaccine manufacturers. The advent of H5N1 changed all of this, opening up the sample-sharing collaborations to renewed questions, and even moral reflection.

Indonesia has never been a significant consumer of the annual flu vaccine, viewing seasonal influenza as an issue for countries in colder climates. Moreover, scientific understanding of the seasonality of influenza in tropical countries is incipient at best. Dr. Supari has gone so far as to claim that Indonesians are not seriously afflicted by the seasonal flu:

Each time we are suffering from the common influenza, it is easy to control it. We need only symptomatic medicine (such as Bodrex, Panadol, and so on), even the method we call *kerokan*. But among Europeans, the same influenza can be lethal, especially in combination with pneumonia. That is why their need of seasonal flu vaccine is uncompromised."³⁸

It seems here that Indonesia's Minister of Health confused "common influenza" with the common cold, a mistake not usually made by a nation's top healthcare administrator in the middle of an influenza crisis. The idea that the influenza virus is a negligible problem in Indonesia is contradicted by numerous studies, including one by NAMRU-2 finding that 12 percent of the childhood diarrhea cases in Indonesia were related to the flu virus.³⁹

Before H5N1 brought the problem of influenza to the attention of Indonesians, the nation's healthcare community had not focused upon the problems involved in sample sharing because Indonesians had not previously consumed seasonal flu vaccine. Once H5N1 came to the fore, however, the Ministry of Health began to view the

³⁸ Siti Fadilah Supari, *It's Time For the World to Change: Divine Hand behind Avian Influenza* (Jakarta: PT Sulaksana Watinsa Indonesia, 2008), p. 12.

³⁹ NAS, *Review of DoD-Geis Programs*, p. 87.

international sample-sharing process in a new, more critical, way. Were Indonesia to be hit with a human H5N1 epidemic, the country would be subsequently importing and paying for a vaccine developed from samples it had altruistically contributed to the global community. Not only would Indonesia earn no profit from vaccine production, but Indonesians might be forced to pay high prices for an H5N1 vaccine if a pandemic should occur. Even more problematic, the vaccine might become unavailable to Indonesia if supplies were consumed by comparatively wealthy countries in the North. Having considered these issues, which were brought to light through the problematic of the avian influenza, Dr. Supari made it clear that all virus samples would henceforth be considered the material property of Indonesia and would require a Material Transfer Agreement for export.

When an Australian company reverse-engineered an Indonesian strain H5N1 seed virus using open-source genetic code obtained from GenBank, Dr. Supari misunderstood this to mean that the company had obtained and illegally exported an actual Indonesian virus sample.⁴⁰ This incident and others led the Indonesian Ministry of Health to withdraw from its influenza-virus sample-sharing agreements and to cease sharing samples or sequence data with the WHO centers collaborating in the annual influenza vaccine effort. Indonesia sought a new, more equitable mechanism that would provide benefits to developing countries as equal partners in international global health initiatives. Dr. Supari coined the neologism “viral sovereignty” to describe Indonesia’s understanding that viral samples from Indonesian patients were national property.

While “sovereignty” is directed at/over multiplicities, it functions within territories—an important aspect in this case. Supari applied the juridical apparatus, linking Indonesian territory and microbial property, in drafting a new Ministerial Decree⁴¹ that demanded the institution of new international sample-sharing agreements that would regulate all exchange of clinical samples, biological materials, and transfers of genetic code. She based her claim upon Section 19 of the Convention on Biological Diversity concerning the “Handling of Biotechnology and Distribution of its Benefits.” The convention’s agenda had enshrined the notion that the South would provide genetic resources to the North based upon *mutually beneficial* compensation mechanisms. Just as US pharmaceutical and agricultural companies had resisted the convention’s interpretations, arguing that plant chemicals and germ plasm were common property available to anyone, and that anyone could modify and patent these materials freely,⁴² now Indonesia raised its own objections. The WHO responded by taking issue with Dr. Supari’s conception of “viral sovereignty,” arguing that procedures based on such a concept would inhibit vital international influenza surveillance and vaccine preparation.

Dr. Supari then spearheaded an effort to close the Naval laboratory, refusing to renew a memorandum of understanding between the NAMRU-2 and the Ministry of Health. She believed that NAMRU-2 should not be sending H5N1 samples to the CDC,

⁴⁰ Ibid., pp. 95–96.

⁴¹ Government of Indonesia, *Peraturan Menteri Kesehatan Republic Indonesia No. 657/Menkes/Per/VIII/2009*.

⁴² Cori Hayden, *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton, NJ: Princeton University Press, 2003), pp. 63–65.

and questioned the idea that NAMRU-2 had substantially contributed to healthcare in Indonesia: "In Indonesia, foreign donations for the control of avian flu outbreak were coming like floods in the end of 2006. But in reality, the benefits from their practice were not significant."⁴³ Dr. Supari herself framed the presence of NAMRU-2 in Indonesia as a further violation of Indonesian sovereignty (*kedaulatan*), thereby employing a rationality that was both identitarian and anti-imperialist.

Dr. Supari's suspicions regarding the CDC and related agencies prompted her intervention on behalf of global health equity. Her critical view of the global health complex was adopted and intensified in quite a few discussions about the problem of influenza in Indonesia, and, in a short time, conspiracy theories entered the discourse. Conspiratorial and paranoid notions circulating within Indonesian media (e.g., books, text messages, television programs) encompassed both the idea that strains of influenza had been manufactured and spread to harm Indonesia, as well as the idea that NAMRU-2 was, in truth, a covert agency gathering intelligence data for the United States. We can observe a transition from the "critical" to the "conspiratorial" in Dr. Supari's own language:

But, in fact, capitalism has not only made certain countries exploit the natural resources of the developing countries. They also exploited part of the human body from the powerless country. They took our blood. They took our cell. They took our antibody. And perhaps it would be more dangerous when in the end they would take our brain cell as well, to be re-engineered to create a new generation of slaves.⁴⁴

Dr. Supari suggested that avian influenza could have been bioengineered at Los Alamos National Laboratory and intentionally developed to infect Indonesia.⁴⁵ Her theory attracted many followers. Concerning the H1N1 swine flu, she claimed it was deliberately manufactured and released to benefit drug makers, and she forwarded the unusual proposition that "H1N1 survives in countries with four seasons. The type A H1N1 virus hopefully won't be able to sustain itself once it enters the tropical climate of Indonesia."⁴⁶ A cottage industry of conspiratorial writings developed that mirrored the health minister's accusations, some blaming influenza outbreaks on Freemasons, others on aerial seeding of swine flu around Indonesia by the CIA.⁴⁷ The authors of these conspiratorial claims all distanced themselves from the details of scientific practice, and their theories took on both nationalist and Islamist overtones. Among the strongest supporters of the health minister were Partai Keadilan Sejahtera (PKS, Prosperous Justice Party), a conservative Islamic political party, and Hizbut Tahrir, an anti-nationalist organization that seeks the return of the Caliphate. The Non-Aligned Movement considered endorsing the concept of viral sovereignty and, enhancing her

⁴³ Siti Fadilah Supari, *It's Time For the World to Change*, p. 30.

⁴⁴ *Ibid.*, p. 119.

⁴⁵ *Ibid.*, pp. 119–20.

⁴⁶ "Swine Flu Outbreak: Swine Flu Could Be Man-Made," *Straits Times*, April 28, 2009.

⁴⁷ Nando Baskara, *NAMRU: Misi Kesehatan atau Jaringan Intelijen Amerika?* (Jakarta: PT Buku Kita, 2008); and Wawan H. Purwanto, *'Mencurigai' Namru-2* (Jakarta: Cipta Mandiri Bangsa, 2008). See also the websites: <http://www.muslimdaily.net/features/5396/bukti-amerika-menyebarkan-virus-flu-babi-melalui-pesawat-dan-keterlibatan-namru-2>, last accessed June 15, 2010; and <http://haroqi.multiply.com/journal/item/1029>, last accessed June 15, 2010.

anti-Western credentials, Dr. Supari devoted a chapter of her book to detailing the support she received from Iran for Indonesia's claim of sovereignty over its own viral material.⁴⁸

Reactions from the global health community to the concept of viral sovereignty were likewise varied. *The Lancet*⁴⁹ published the most widely noted comment in support of Indonesia's ethical position, though some Indonesian scientists I spoke with considered *The Lancet's* stand paternalistic because it didn't account for the many Indonesians who had joined in international efforts to understand and combat avian influenza. Like these Indonesian scientists, most Western global health experts criticized the concept of viral sovereignty as a logic that would endanger global health generally and hamper efforts to confront pandemics and improve health worldwide. Richard Holbrooke and Laurie Garrett, for example, wrote:

Here's a concept you've probably never heard of: "viral sovereignty." This extremely dangerous idea comes to us courtesy of Indonesia's minister of health, Siti Fadilah Supari, who asserts that deadly viruses are the sovereign property of individual nations—even though they cross borders and could pose a pandemic threat to all the peoples of the world.⁵⁰

A key difference in the Foucaultian articulation of "sovereignty" vis-à-vis "optimization" is that while the former seeks to intervene in and transform a natural phenomenon (Foucault uses the example of preventing famine by forcing production and blocking exports), the latter seeks to understand a natural phenomena in order to develop self-indicated techniques specific to its government (i.e., optimizing grain flows and prices to ameliorate the possibility for and effects of famine). Sovereignty, according to Foucault, does not require an intimate understanding of natural processes, but rather the power of law over territory.

In the political form of viral sovereignty, its proponents evidence an indifference toward the natural phenomena in which they wish to intervene. Iskandar's description of the need for independent vaccine production demonstrated a noticeably weak understanding or acknowledgment of the material dimensions of viral transmission, for example. Rather than invoking the theory of contagion implicit in long-distance air travel, or the epidemiological implications of the annual international Hajj gathering in Mecca of 200,000 pilgrims from all over the world, the director of Indonesia's national vaccine producer theorized that a traveler's vulnerability to the flu would be influenced by the climate, observing that "the weather" is different in Saudi Arabia. In deploying the mechanism of sovereignty, Dr. Supari's interpretation of this complex situation, with its emphasis on "identity," had rendered her adherents less likely to study and seriously consider the biological aspects of transmission and infection.

⁴⁸ Supari, *It's Time for the World to Change*, pp. 94–113. Following the national elections of 2010, President Susilo Bambang Yudhoyono replaced Dr. Supari as minister of health with Dr. Endang Rahayu Sedyaningsih. Dr. Supari promptly accused the new health minister of having illegally exported viral samples from Indonesia in the past, causing the new minister to be suspected of being an American sympathizer.

⁴⁹ "Global Solidarity Needed in Preparing for Pandemic Influenza," *The Lancet* 369, February 17, 2007.

⁵⁰ Holbrooke and Garrett, "'Sovereignty' that Risks Global Health," p. B7.

Healthy Poultry, Healthy People, Healthy Communities: The FAO

The United Nations Food and Agriculture Organization (FAO) is a multilateral agency that has worked to combat transborder epizootics since it first tackled outbreaks of foot-and-mouth disease in post-WWII Europe.⁵¹ During the avian influenza crisis, FAO has provided technical and policy advice, laboratory equipment, and protective clothing, and has run public awareness and advocacy campaigns. The FAO works closely with both the OIE and, since the disease is a zoonosis, with the WHO.⁵² Rhetoric from the FAO's Avian Influenza Control Program in Indonesia began in the same frame as did other global health institutions concerned with H5N1:

UN officials are urging Indonesia to take more aggressive steps to contain the bird flu epidemic in poultry before the current human outbreak escalates and spreads beyond the country's borders. With avian influenza now diagnosed among birds in two-thirds of the country's provinces, Indonesia must begin the immediate culling of poultry in infected areas and revamp its campaign to vaccinate fowl against the virus, according to officials from the UN Food and Agriculture Organization.⁵³

Regarding the H5N1 scenario, FAO in Indonesia was most concerned with improving local government veterinary services to control Highly Pathogenic Avian Influenza (HPAI) in poultry. It did not stop with veterinary medicine or a vaccination strategy, however; its plans dealt with human health as well. Its publicity video, *Strengthening Veterinary Services and Empowering Communities to Control HPAI*, stated, "While FAO's role in the global HPAI struggle can be seen mainly from the animal health perspective, in Indonesia, FAO's approach has been implemented in support of the *human element* [emphasis added] in this HPAI crisis."⁵⁴ The FAO, whose largest donor for the project was USAID, developed two strategies to deal with avian influenza in the agriculture sector: 1) community-based avian influenza control; and 2) a public communications strategy. In the FAO effort, what emerged was a concern with "discipline" and the making of a new subjectivity that would be introduced by preparing Indonesian farmers to internalize certain behaviors when they encountered sick poultry.

The FAO AI program was designed to bring influenza surveillance out to the rural communities of Indonesia and to inform rural families about the dangers of avian influenza. In the words of one FAO staff member I spoke with, "when a chicken dies, I want them to think rabies, not the flu." The program for community-based avian-influenza control trained village avian-influenza coordinators in the techniques of Participatory Disease Surveillance and Response (PDSR). Coordinators learned to recognize H5N1 symptoms in backyard poultry and to report to Public Health Disease Surveillance Officers if they saw birds with these symptoms. These veterinary officers,

⁵¹ A zoonosis is an animal disease that can be transmitted to humans. An epizootic is an animal disease that spreads (like an epidemic in humans) across a wide area.

⁵² UN Food and Agriculture Organization, *Enemy at the Gate: Saving Farms and People from Bird Flu* (Rome: Food and Agriculture Organization, 2007).

⁵³ Sipress, "UN Urging Indonesia."

⁵⁴ UN Food and Agriculture Organization, *Strengthening Veterinary Services and Empowering Communities to Control HPAI*, FAO Jakarta, DVD / video.

in turn, were trained by FAO fieldworkers in vaccination, rapid diagnosis, quarantine, and culling methods.

FAO compared the “participatory” aspect of PDSR to “participatory rural appraisal” techniques, and it encouraged and extended disease surveillance through classical development technologies (i.e., the focus group, simple graphic representations, games, and practice exercises aimed, for the most part, at non-literate people). When the program worked well, the rural people it had trained were expected to react to poultry deaths in a particular way:

On June 16, 2008, Mr. Sunar’s backyard poultry were wiped out by a silent killer. Alarmed, he reported the deaths to his neighborhood representative. They had learned that sudden death in poultry could signal an outbreak of deadly bird flu from a television announcement. In their sleepy neighborhood outside Medan, North Sumatra—Indonesia’s third largest city—they could have felt panicked and alone. Instead, they stayed calm because the TV message had also taught them what to do: report the suspected outbreak to local authorities.⁵⁵

In my discussions with farmers around the Javanese countryside, I found a wide variety of reactions to the problem of avian influenza, none of which involved either panic or reports to authorities, although I am sure there were some people who would have followed the FAO’s ideal response plan. Nearly everyone I spoke with had heard of a new poultry disease, but no one said they would do anything special about it if their chickens began to die. Women, who tend to be responsible for tending chickens, were usually more aware of die-offs than were men. Those who expressed a reluctance to restock after a number of chickens had died attributed their decision to fear of losing one’s investment rather than fear of disease. I only encountered the fear of avian influenza in my own urban neighborhood in Yogyakarta, where people slaughtered their chickens once the outbreak was publicized.

The FAO AI program collaborated with the Indonesian Red Cross and Muhammadiyah (Indonesia’s second largest Islamic organization) to gain access to existing social networks at the village level. FAO was also interested in administrative networks at the local government level. Local government has been viewed as especially important in the wake of post-Suharto-era decentralization (called *otonomi daerah*) in Indonesia, a national political reform that dispersed central government responsibilities, including responsibilities for animal health, to regional and local governments.⁵⁶ Often decentralization has meant that public veterinary programs have lost funding. FAO took on the role of coordination between the central government and Indonesia’s highly decentralized local government system.⁵⁷

The territorial strategy of the program at first encompassed the entire Indonesian archipelago. The goal was to prepare village coordinators across all of Indonesia in order to eradicate, or at least diminish, the disease in the countryside nationwide. When this program was at its height in 2007-08, 2,150 officers in 324 districts had been trained in PDSR. Later, it became clear that this wide territorial strategy was both

⁵⁵ US Agency for International Development, *Success Story: Community Spurred to Action by Mass Media Campaign* (Washington, DC: USAID, 2008).

⁵⁶ FAO, *Strengthening Veterinary Services*.

⁵⁷ *Ibid.*

overreaching and perhaps unnecessary, and the program shrank to cover only the most seriously affected areas of Java and Sumatra. FAO was explicit that PDSR was not a temporary fix attuned only to avian influenza. Rather, the program would provide a lasting framework for responses to human and animal health threats, oriented to the future, that moved beyond treatment of H5N1 to establish a sustainable surveillance system for other emerging zoonotic diseases.

Of all the influenza interventions explored in this article, the FAO intervention is the only one that was centrally concerned with human subjectivity:

From community radio shows, to preparing local government officials to deal with the media, to meeting with farmers in focus group discussions, to promoting HPAI awareness in local communities, understanding and addressing the human perspective is essential and is the foundation of a vision of healthy poultry, healthy people, healthy communities.⁵⁸

The PDSR program explicitly disavowed that it worked through an apparatus of sovereignty, repeatedly stating that the FAO had become active in Indonesia in response to a request from the Indonesian government. While the juridical principle that enabled the FAO to become involved was egalitarian, PDSR remained a disciplinary form: bodies were individuated, given tasks and duties, and combined to create a mass capable of conducting disease surveillance and responding to it in a prescribed way. Foucault describes these acts of discipline and their relationship to egalitarian juridical forms this way:

The general juridical form that guaranteed a system of rights that were egalitarian in principle was supported by these tiny, everyday, physical mechanisms, by all those systems of micro-power that are essentially non-egalitarian and asymmetrical that we call the disciplines.⁵⁹

When Dr. Supari speculated that the international community would “take our brain cells as well, to be re-engineered to create a new generation of slaves,” although she overstated her case, the micropractices of sustainable surveillance proposed by the FAO more closely resembled her imagined scenarios than did the laboratory work of NAMRU-2. In fact, the physical habits and attitudes instilled by the FAO’s PDSR program are reminiscent of the disciplinary and developmentalist practices of the Suharto era. Perhaps because these practices seemed already so familiar, the work of the FAO did not attract the same field of critics or the same accusations of violated sovereignty that sample testing and sharing had aroused.

Careful Scientific Conduct: The Indonesian Ornithologists’ Union

Java is the site of a great many human–avian interactions that do not involve raising poultry. According to a local articulation of “Javanese Culture” that I have heard in Central Java, there are five things that every Javanese man needs: a *kris*

⁵⁸ Ibid.

⁵⁹ Michel Foucault, *Discipline and Punish: The Birth of the Prison* (New York, NY: Random House, 1975), p. 222.

(*curiga*), a home (*wisma*), a wife (*wanita*), a horse carriage (*turanga*), and a bird (*kukila*).⁶⁰ Not only do many Javanese households keep ornamental birds, but Java is also home to numbers of resident and migratory wild birds. Migratory birds stop in the Indonesian archipelago on passages between the northern and southern hemispheres, and Indonesia sits on the East Asian–Australasian, East Asian, and Central Asian flyways.⁶¹ So, when H5N1 broke out in Indonesia, the ramifications extended beyond agriculture into quite a few other regimes of identity and nature.

Enter the Indonesian Ornithologists' Union (IdOU), an Indonesian scientific NGO with an international membership set up by Indonesian ornithologists in 2004 to advance the scientific practice of ornithology in Indonesia. Funding for IdOU has come from the Gibbon Foundation, NAMRU-2, and the Oriental Bird Club of the United Kingdom.⁶² IdOU publishes the journal *Kukila*, which documents recent scientific and taxonomic findings on the bird life of Indonesia. "For the coming 2006–2010, all possibly executed projects by IdOU will also be using these ad hoc basis and opportunistic approach [*sic*]," it says in its organizational statement, and "'Opportunistic' means that projects will always see resources available at IdOU [*sic*]."⁶³ In 2006, an opportunity opened up for IdOU to lead a study of wild bird H5N1 surveillance in partnership with NAMRU-2 and the National Institute for Health and Diseases (Balitbangkes), under the Indonesian Ministry of Health. The three institutions collaborated on a project that involved the gathering of field data, lab analysis, and publication, and that also brought in a regional partner, an ornithologists' foundation named Yayasan Kutilang Indonesia, from Yogyakarta, Central Java.

Wild birds have been suspected as a possible vector of H5N1 transmission because wild waterfowl are the natural reservoir of all influenzas. The IdOU study examined three types of birds at five sites across Java: migratory birds, resident wild birds, and resident captive birds. Field teams were divided into "catchers" and "samplers." Catchers were responsible for catching, measuring, and releasing the birds; samplers for obtaining cloaca (throat) swabs and blood samples. Samples were then sent to the labs at NAMRU-2 for RT-PCR analysis for H5N1 presence, with the understanding that samples must remain in Indonesia.

I once watched these sampling procedures performed on a sandpiper at Trisik Beach along the southern coast of Java. Three samples were taken from the bird: an oral and anal swab and a blood draw. A centrifuge was used to separate plasma from blood, and the samples were stored in a tank of liquid nitrogen. The sandpiper was also measured and sexed, and shortly thereafter released in the same place where it had been captured (there are over one hundred wild bird species in the Trisik area). At the beach-side lab, biosafety precautions were established to protect both birds and humans. These included the use of rubber gloves and masks, and antiseptic disinfectants. Bird capture and handling was also subject to ethical protocols to ensure

⁶⁰ Translations are in Javanese (*kromo inggil*).

⁶¹ Arthur C. Stoops et al., "H5N1 Surveillance in Migratory Birds in Java, Indonesia," in *Vector Borne and Zoonotic Diseases* (New Rochelle, NY: Mary Ann Liebert, Inc, 2009).

⁶² Mochamed Indrawan, H. Lasana, Y. Mulyani, eds., *Panduan Pemantauan Flu Burung Pada Burung Liar dan Unggas: Disertai Informasi Kesehatan Masyarakat* (Bogor: Indonesian Ornithologists' Union and Yayasan Kutilang Indonesia, 2008).

⁶³ Indonesian Ornithologist's Union, "Profile," unpublished, 2006.

humane treatment of the animals. The sandpiper was kept in a small plastic basket with a towel over it to block the light and thus keep the bird calm, and the samplers made sure that the each procedure in the test lasted no more than five minutes to prevent stress and the possible death of the bird.

Unlike the work of the FAO described above, which was premised upon the concept of “population,” understood as communities whose abilities could be molded to the arts of governance—i.e., discipline—the work of IdOU had a different focus, which was comparable to the FAO’s “population” but is not reducible to it. IdOU was interested in expanding scientific training in several directions. First and foremost, IdOU protocols were directed toward the field scientists who were implementing ornithological surveillance across Java. IdOU carried out field inspections and published a field manual,⁶⁴ attending to the parameters that outlined safe research protocols for wild bird surveillance, with care for the health and safety of both researchers and birds.

IdOU’s work aimed to foster capacity building and the improvement of Indonesian fieldwork techniques, including what the organization described as “careful scientific conduct.” For example, the program included efforts to build capacity in scientific writing and publishing. Rather than being asked merely to send samples along to the experts, the researchers were encouraged to publish their findings on the biodiversity of birds at each site, or reports of their collecting methods, or even their observations of other species, such as bats, which might be inadvertently collected in mist nets and traps. Additionally, the issue of sample analysis arose, and field staff members were invited to visit NAMRU-2 to witness and learn about techniques of laboratory analysis. In addition, the group attempted to develop personal protective equipment appropriate to the tropics, where it is not always possible to wear protective clothes and masks due to the heat and rain.

IdOU’s emphasis on improving scientific knowledges and techniques also extended to the people living around the collection sites, especially in the communities where wild birds were captured to be sold. The field teams were expected to model biosafety protocols to illustrate how a person could protect herself against H5N1 and other zoonotic diseases. The ornithological sampling survey was explained to people in the villages, and results of the analyses were disseminated. IdOU representatives shared the data results indicating that thus far the presence of H5N1 had not been found, but they also explained that the virus could spread or mutate in the future and described the attendant dangers that H5N1 posed to humans and poultry.

In both these initiatives—to build scientific capacity and educate the public—the work of IdOU was oriented toward a concept of the “public” expressed by the Indonesian word *masyarakat*. Scientists, as members of an NGO movement, are a part of the “civil” *masyarakat* (*masyarakat sipil*), a phrase that signifies members of the public consciously engaged with the public sphere (village and *kampung* people are considered simply *masyarakat*). In either case, for the IdOU, the *masyarakat* was both more than and less than a mass of people amenable to concerted intervention by the state. It was less than a “population,” as understood by the FAO, in that its characteristics were not an object of study by IdOU, nor did the IdOU aspire to

⁶⁴ Indrawan, *Panduan Pemantauan Flu Burung Pada Burung Liar dan Unggas*.

enhance this group's capacities systematically through planned programming, as the FAO had sought to do. The *masyarakat*, as understood by these Indonesian ornithologists, was also more than a "population" because it always has the potential to be a force that acts against the state, especially in the current post-Suharto "reform" era. IdOU's knowledges could be both formal, but also subjugated, hidden and unrecognized, having the potential to be "disqualified" knowledges. For example, local veterinary authorities could prohibit IdOU staff from explaining H5N1 to the public because it was the government's job alone to care for the people.

Health Disparity vs. Biosecurity: Global Health in Question

When H5N1 jumped the species barrier to become a fatal human disease, and when Indonesia then became a center for human cases, Indonesia was brought face to face with internationally circulating understandings of global health that it could not, and to an extent would not want to, ignore. As Arjun Appadurai notes:

In the remaining countries of the world, the underdeveloped and the truly destitute ones, there is a double anxiety: fear of inclusion, on draconian terms, and fear of exclusion, for this seems like exclusion from history itself.⁶⁵

On the one hand, there were Indonesians' efforts to contribute to the technoscientific H5N1 intervention by initiating pandemic preparedness, vaccine production, PDSR, and surveillance of wild birds. On the other hand, there was the suspicion that the terms of inclusion in the project were perhaps draconian. The intervention would take resources away from other health and scientific efforts, sample-sharing practices might not benefit Indonesia when Indonesians were suffering from influenza, and Indonesia would be asked to contribute too much to an effort that seemed, at times, to be most concerned with somewhere else.

The outbreak of H5N1 was an event that unsettled known territory for health-related science and care in Indonesia. The massive amount of scrutiny and the size of budgets mustered to confront the outbreak altered the trajectories of all institutions involved: the future of NAMRU-2 in Indonesia became uncertain; FAO began to emphasize human dimensions more acutely; IdOU imagined new scientific uses for its ornithological knowledge; and a new national commission was created. Many of these changes would last: Komnas FBPI is now attempting to become a permanent institution responsible for dealing with zoonoses in general; the FAO imagines its PDSR program to be a flexible strategy appropriate for handling other livestock diseases; Indonesia has instituted new material transfer agreements; and the WHO has changed its sample-sharing practices.

While global health, as a rubric, is programmatically attuned to the concept of "health disparities," some inequities in Indonesian health knowledge or care were not recognized as legitimate problems by those organizations that took part in the H5N1 intervention. The most notable of these problems was the vulnerability of Indonesia to vaccine shortages and high prices within the established international system of sample sharing. The disadvantages Indonesia faced as a consumer of influenza vaccine

⁶⁵ Arjun Appadurai, *Fear of Small Numbers* (Durham, NC: Duke University Press, 2006), p. 35.

were not initially apparent to major global health institutions like the WHO. The adjustment of NAMRU-2's research agenda from basic science to pandemic surveillance, which took attention away from malaria and other threats to the health of Southeast Asian populations, could also be viewed as adding to international "disparities," conceived broadly.

Inequities related to healthcare were also less apparent as disparities when they occurred between Indonesian actors themselves, rather than across international divides. For example, when government veterinary authorities refused to let IdOU scientists publicize their knowledge of H5N1 because it wasn't their job to do so, villagers were denied access to crucial means of protecting their health against a deadly disease. Or when Dr. Naipospos was fired from the Indonesian Department of Agriculture for announcing to the press the existence of H5N1 in Indonesian poultry, information that private agricultural firms had wanted to stifle, this created an issue that was not about international hegemony, yet which demonstrated unaddressed inequities within Indonesian institutions.

The rubric of global health, as I have argued, is also characterized by an interest in protecting against biological threats that cross national borders, especially those that seem to emerge first outside the United States or Europe and then threaten the "First World." H5N1 influenza was one of the first few diseases to be approached by the international community through the paradigm of global health. Helping to make the link between "Third-World" health and "First-World" security explicit, Indonesia came to be viewed as a risk to global biological security, and pressures (both carrots and sticks) were brought to bear on Indonesia to encourage it to cooperate in the international preparedness effort. A flood of funding rewarded those who could take up the banner of pandemic preparedness and who could position Indonesia as an ethical and attentive global actor in the potential (and actual) outbreak scenario. Likewise, Indonesia's position within the international community suffered when it took a stand defending "viral sovereignty."

In studying H5N1 in Indonesia as a problematization that created uncertainty and induced changes in the ways of understanding, acting, relating, and operating within the milieu of global health, we can see that different perspectives and solutions coexisted simultaneously in reaction to the twin challenges of "funding" and "attentiveness" in Indonesia. Viewing global health as a milieu, but not as a structure or a discourse, has provided a chance to examine these differences in detail. While the scope of truth and falsity was not unlimited, it was wide, and most importantly, it was not delimited simply by national identity. What we can take away from Indonesia's experience with H5N1 in light of the differences among institutional actors and their different responses to the problem of H5N1 is that any problem domain will exhibit divergent possibilities and solutions.

Studying the interplay of sovereignty, surveillance, and optimization that took place as the international healthcare community sought to intervene in Indonesia following the outbreak of H5N1 puts into relief the struggle between the ongoing conditions of care in Indonesia versus the forces seeking to protect the international community from pandemic influenza. Rather than view the intervention as shaped by a particular normative rationality, I have examined shifts in rationality that resulted from the preparedness intervention and were particular to each institution involved.

As NAMRU-2 developed a response to H5N1, its rationality shifted from optimization to surveillance. As the Ministry of Health argued for viral sovereignty, it emphasized sovereignty at the expense of optimization. These developments illustrate why Foucault could argue that the mechanisms and relations of power are not historically progressive. Because, in this case, different institutions operated through different mechanisms, the overall program of intervention exhibited a common purpose but not a unified or unifying rationality. In the ever evolving "system of correlation" between the juridical, disciplinary, and security apparatuses deployed in the H5N1 problematization, we see not "progress" in the deployment of power, but, rather, how the correlations were responsive to the problems delimited by their milieu, that is to say, by a new way to characterize the relationship of globalization to human health. This could make a difference to someone with the flu in Indonesia.