Risk, modernity and the H5N1 virus in action in Indonesia

A multi-sited study of the threats of avian and human pandemic influenza

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ABSTRACT

This thesis examines the Influenza A/H5N1 virus in action through an ethnographic study focused on the entwined concepts of risk and modernity. The objective is to explain why the response to the virus has been challenged in Indonesia. Concerned with policy formulation, and everyday practice, the thesis argues that assemblages of historical, political, institutional and knowledge-power processes create multiple hybrid constructions of risk and modernity, which challenge technical responses based on epistemological positions and institutional arrangements that do not allow for such hybridity.

The thesis is organised into four sections. The first section (chapters 1 – 3) introduces the virus and its terrain, outlines a constructivist position, and argues that conceptually risk and modernity have multiple, dynamic, power-laden forms. The second section (chapters 4 – 6) contrasts constructions of risk and modernity among the actors and networks responding to the emergence, spread and persistence of the H5N1 virus, with the constructions of affected people in Indonesia. The third section (chapters 7 – 9) investigates the multi-directional processes that occur when 'global' policies and practices encounter 'local' social and political settings, and vice versa, through three empirical case studies of the response to H5N1 in Indonesia between 2005 and 2010.

The final section (chapter 10) provides a set of reflections and conclusions. Given the conceptual plurality of risk and modernity, and the multiple overlapping interacting hybrid constructions that have been empirically demonstrated in the case of H5N1, it is concluded that reductive, science-based, governmentally-orientated responses which treat nature as a matter of separate, fixed identity do not allow for such hybridity. The virus in action in Indonesia shows that any divide between nature and society is artificial and deceiving. Technical disease control responses need to incorporate understandings which accept the dynamics of culture, politics, and power.

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STATUTORY STATEMENT

This thesis has not previously been submitted to Sussex University, or any other university, for a degree, in this or any other form.

Signed

William Paul Forster

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1. Introduction

> 'The virus is capricious, the disease elusive, and our remedies imperfect.'
> (Neustadt and Fineberg, 1978:87)

1.1 A 'slippery' disease

In their anatomisation of US government decision-making during the 1976 - 1977 swine flu programme, which involved unprecedented plans to vaccinate the entire US population against a novel influenza virus, Neustadt and Fineberg term influenza 'a slippery disease'. Their grounds are manifold. First, the virus is 'capricious': a sub-microscopic particle of shifting genetic fragments of mysterious infectivity, mobility and virulence, from which there is no completely effective way to protect a population, individual resistance or vaccination being only temporary stops in the face of constant viral mutation and re-assortment. Second, what people call flu and what virologists call flu are not always the same: flu-like illnesses are not always caused by influenza viruses. Third, influenza viruses rarely cause death directly. More commonly, secondary bacterial infections contribute to death, often in patients with other serious illnesses. Simply counting flu deaths is tricky, therefore, even in the best circumstances, and calculating morbidity (the effect of the illness on those that don't die) is even more difficult. Environments vary too: biological, physical and social factors all affect influenza epidemics, which, for reasons that are not understood, occur seasonally in temperate climates, during the winter.

Similar uncertainties and gaps in bio-medical knowledge persist more than 30 years later, as two seasonal influenza epidemics (one per hemisphere) continue to cause three to five million cases of severe illness worldwide each year and 250,000 to 500,000 deaths, mainly among the very young, elderly or chronically ill (WHO, 2003). The recent H1N1 'swine flu' pandemic, declared by the World Health Organization (WHO) on 10 June 2009, also confounded the experts. It emerged from an industrial pig farm in Mexico, not from poultry in China or south-east Asia as was anticipated, and in the face of predictions that up to half the US population could be infected, and that in the UK, 65,000 could die, the event proved to be remarkably mild. At 11 June 2010 only some 18,000 deaths had been confirmed as a result of the virus worldwide[1] and the WHO stood accused of over reaction, wasting money, frightening people unnecessarily, and inappropriate commercial interests among its technical advisors

[1] Source: WHO. Available at: http://www.who.int/csr/don/2010_06_11/en/index.html [accessed 12 June 2010]

(Cohen and Carter, 2010). For its part, the WHO insisted that it didn't overplay the dangers, but 'prepared for the worst and hoped for the best'.[2]

Behind the rhetoric concerning influenza lies a spectre of the 1918 - 1920 (H1N1) 'Spanish flu' pandemic, which caused more than 50 million deaths globally, and events such as the 1956 - 1958 (H2N2) 'Asian flu' and 1968 - 1969 (H3N2) 'Hong Kong flu' pandemics, which caused an estimated two million and one million deaths respectively (Barry, 2004:4). Once a fully contagious pandemic virus emerges, its global transmission, spread through coughs, sneezes and touching infected surfaces, is considered inevitable, with vaccine formulation, production and distribution requiring a minimum of four to six months (Smith et al., 2011). The economic costs of an influenza pandemic today also are postulated to be significant. The World Bank suggests that a severe event could result in a three per cent loss of global output, representing US$2 trillion - 3 trillion over a year, with events equivalent to the 1968 event resulting in US$450 billion losses, and the 1957 event US$1.3 trillion (Burns et al., 2008).

These fears coalesced in late 1997, when a highly pathogenic H5N1 Influenza A virus, first isolated the previous year in China's Guangdong province, caused 18 recorded human cases and six deaths in Hong Kong, and then spread widely among some 1.2 million chickens and 300,000 ducks and geese in the territory. The prompt but chaotic culling of all these animals quelled the outbreak, and strict regimes of market cleaning were subsequently introduced (Sims et al., 2003). Nevertheless, the virus resurfaced in Hong Kong's markets in 2001 and 2002, and by February 2004, Cambodia, Indonesia, Japan, the Republic of Korea, Lao PDR, Thailand and Viet Nam had all reported outbreaks in poultry,[3] and Thailand had recorded three laboratory confirmed human cases and two deaths, and Viet Nam eight cases and six deaths.[4] Then, as the virus spread into the Middle East, Africa and Europe during the course of 2005 and 2006, concern rose globally, especially following the 2002 - 2003 outbreak of a previously unknown disease, severe acute respiratory syndrome (SARS), which had spread rapidly from southern China and Hong Kong to cause over 8,000 known cases in 37 countries, 774 deaths, and considerable economic disruption (Gumel et al., 2004).

In response, on 14 September 2005, US President Bush announced the formation of the International Partnership on Avian and Pandemic Influenza (IPAPI) at the United Nations

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[2] Source: Bloomberg News, 14 January 2010. Available at: http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a3uksMQxw2PA [accessed 21 June 2010]

[3] Source: OIE. Available at: http://www.oie.int/eng/info/en_sam.htm [accessed 14 June 2010]

[4] Source: WHO. Available at: http://www.who.int/csr/disease/avian_influenza/country/cases_table_2004_01_28/en/index.html [accessed 14 June 2010]

General Assembly, and later that month, the United Nations (UN) appointed a senior influenza coordinator responsible for multilateral action. In November the same year, the UN's World Health Organization (WHO) and the Food and Agriculture Organization (FAO) working with the World Organisation for Animal Health (OIE), produced a global strategy focusing on enhanced national and regional collaboration, improved laboratory and surveillance capacity, containing outbreaks through culling, increased bio-security and vaccination, and public communication programmes.[5] Subsequently in January 2006, an international conference in Beijing, co-hosted by the Government of the People's Republic of China, the European Commission and the World Bank, raised pledges of US$1.8 billion for affected countries and countries 'at risk', and 99 countries endorsed the final 'Beijing Declaration' (Beijing Declaration, 2006). This announced: '... a long-term strategic partnership between the international community and the countries currently affected or at risk in which adequate and prompt financial and technical support is mobilized to complement the efforts by countries and regions, particularly developing countries'.

Although a lethal and highly contagious disease of poultry, which may have been highly pathogenic avian influenza (HPAI),[6] is recorded as early as 1872 in the USA (Morens and Taubenberger, 2010), and 1878 in Italy (Petek, 1981), before 2003, HPAI is considered to have occurred rarely, with only 20 outbreaks reported between 1959 and 2003 (caused by H5N1 and other subtypes).[7] Since 2003, there have been an uncountable number of outbreaks of HPAI caused by H5N1, with 62 countries reporting outbreaks in poultry and wild birds between 2003 and August 2010,[8] including a peak of 56 countries in 2006.[9] In 2008, estimates suggested that as many as two billion of the standing global poultry population of 18 billion birds had been killed by the disease, or culled to prevent its spread.[10] In 2009, the picture brightened for some, with the number of countries reporting outbreaks falling to 12, and just eight countries accounting for 90 per cent of outbreaks, including Bangladesh, China, Egypt, Indonesia, Nigeria and Viet Nam. In 2010, however, the number of countries reporting rose to 18, the overall number of outbreaks reported increased, and the virus reappeared in five countries, including

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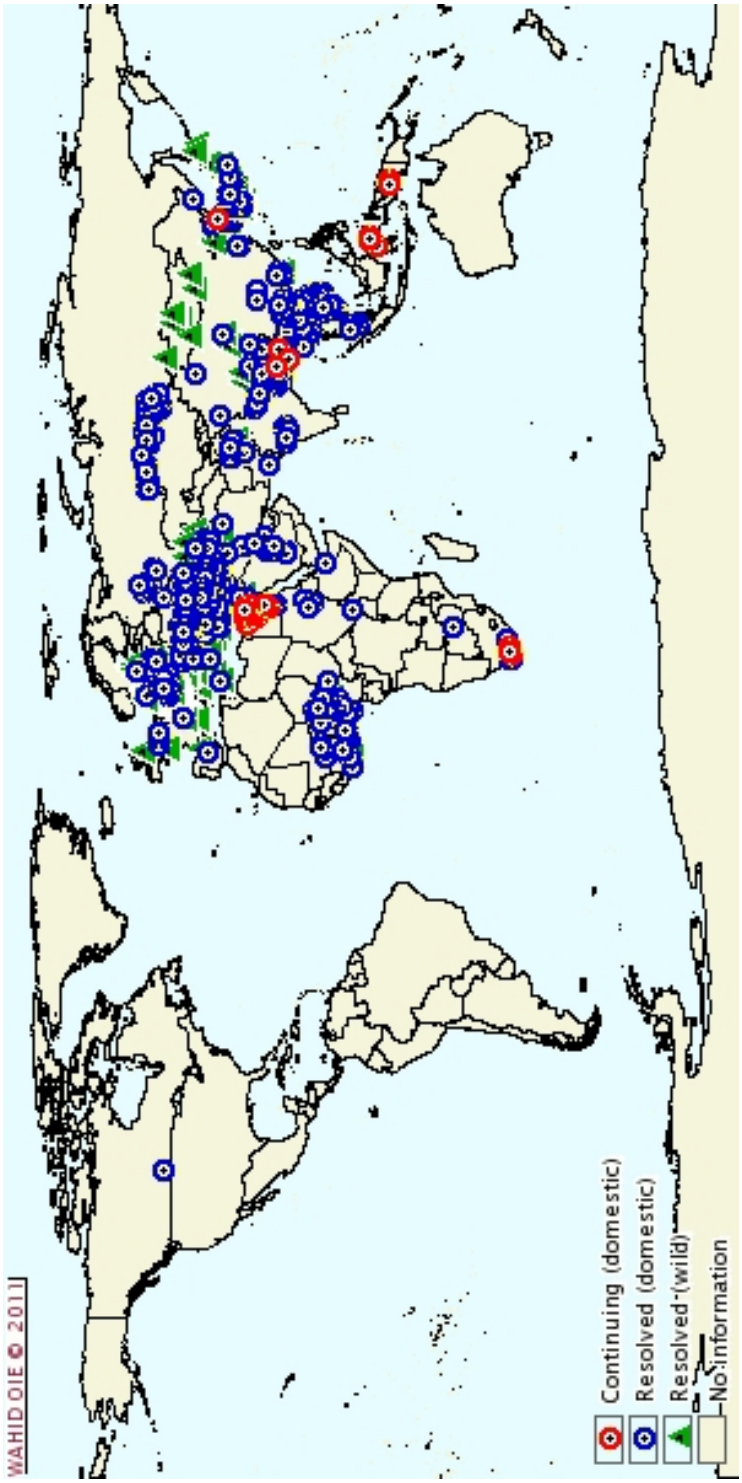
[5] See: FAO-OIE Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza. Available at: http://www.un-influenza.org/node/2468 [accessed 15 May 2010]
[6] This was referred to as 'henfluenza' at the time, and subsequently described as 'fowl plague'.
[7] Source: Medical News Today, 3 March 2004. Available at: http://www.medicalnewstoday.com/articles/6306.php [accessed 12 May 2010]
[8] Source: FAOAIDEnews, Situation Update 69, 2 September 2010. Available at: http://www.fao.org/docrep/012/ak779e/ak779e00.pdf [accessed 4 March 2011]
[9] Source: OIE. Available at: http://www.oie.int/animal-health-in-the-world/update-on-avian-influenza/2006/ [accessed 7 September 2008]
[10] Source: Charles Lambert, Deputy Under Secretary, USDA. Presentation at Sixth International Ministerial Conference on Avian and Pandemic Influenza, Sharm el-Sheikh, 26 October 2008

Bulgaria and Romania, the first reports in Europe since 2008.[11] At July 2010, the overall worldwide situation was considered to have not markedly improved since 2003, despite significant international attention and funding focused on affected geographical areas, driven by fear of a catastrophic human pandemic and notions associated with working towards a global human and animal public health good (Tarantola et al., 2010). Figure 1, below, shows areas with outbreaks in domestic and wild birds from 2005 - 2011.

[11] Source: FAOAIDEnews Situation Update 78, 22 June 2011. Available at: http://www.fao.org/docrep/014/al867e/al867e00.pdf [accessed 15 September 2011]

Figure 1: Areas with H5N1 highly pathogenic avian influenza outbreaks in domestic and wild birds worldwide 1 January 2005 - 30 June 2011.



Source: OIE WAHID.[12]

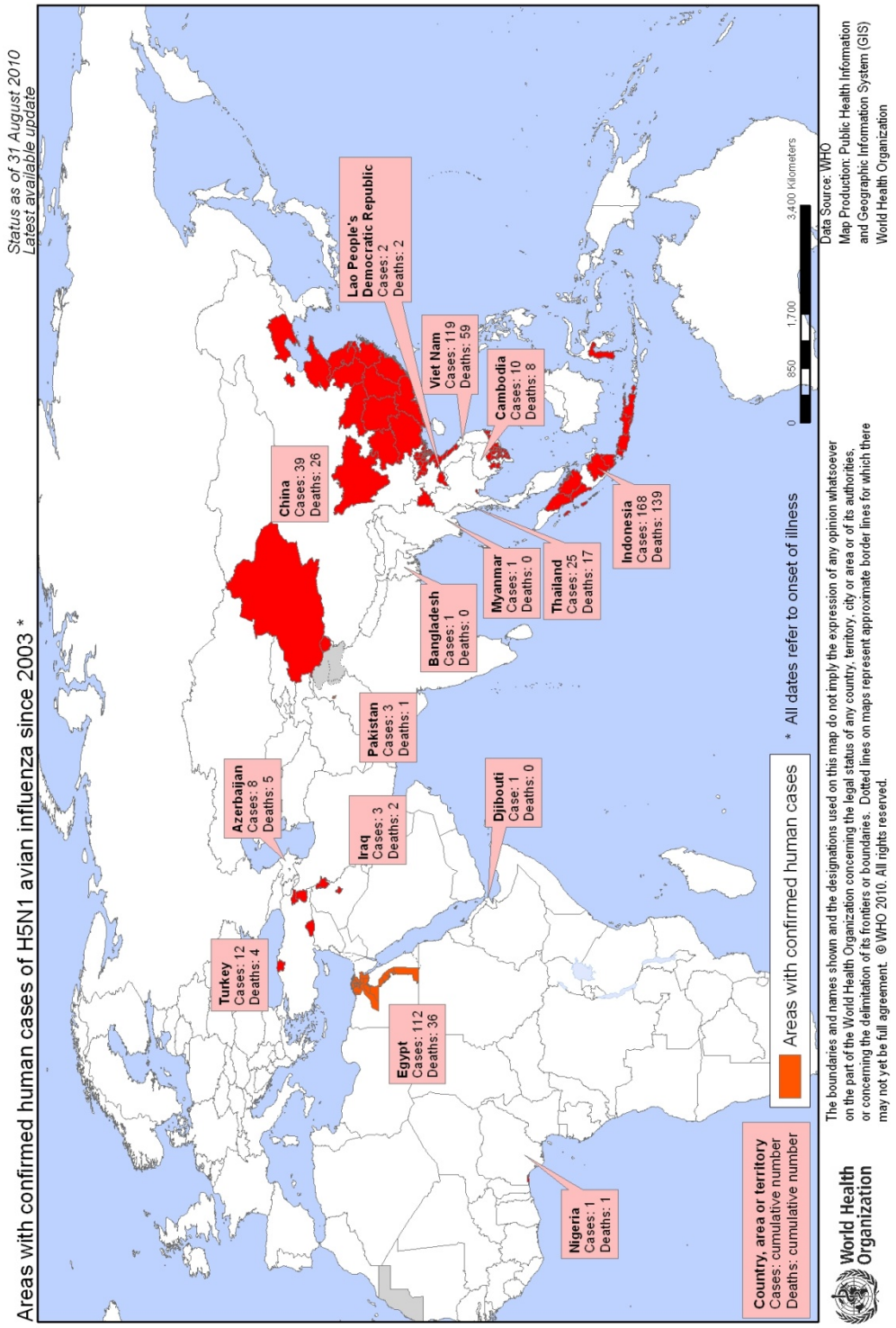
[12] Available at: www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm [accessed 20 July 2011]

To date, however, the H5N1 virus has remained highly species specific, with only 516 laboratory confirmed human cases and 306 deaths reported from 15 countries to January 2011.[13] Northern countries have had very few human deaths and have effectively contained animal outbreaks.[14] Southern countries, especially those with significant numbers of poultry birds (chickens, ducks, and quail) have been more challenged. Figure 2, below, shows areas with confirmed human cases. Highly pathogenic strains of avian influenza, such as H5N1, kill almost all infected poultry within 24 hours, and in many parts of Africa and Asia, where veterinary services are under resourced, and chicken and eggs are important sources of protein, related economic shocks have hit small farmers and commercial poultry producers badly (Rushton et al., 2005). The existing danger to humans, however, is currently considered to be slight. As with other influenza viruses, wild aquatic birds are the natural hosts, carrying the virus asymptomatically in the gut and excreting it in droppings, and virus strains only rarely cross the species barrier to infect people, either directly or via intermediate hosts such as pigs or poultry. Nevertheless, at any time the 'capricious' influenza virus may mutate or re-assort into a form which more readily infects humans, and more readily transmits between them, to cause a pandemic the extent and severity of which is unknown.

[13] Source: WHO. Available at: http://www.who.int/csr/disease/avian_influenza/country/cases_table_2011_01_05/en/index.html [accessed 19 June 2011]

[14] An outbreak of highly pathogenic A/H7N7 avian influenza in birds, which began in the Netherlands in February 2003, caused the death of one veterinarian (from an acute respiratory illness) and caused mild illness (mostly eye infections) in 88 poultry workers and members of their families. Source: http://www.ecdc.europa.eu/en/healthtopics/avian_influenza/basic_facts/Pages/QA_avian_influenza.aspx [accessed 7 December 2010]

Figure 2: Areas with confirmed H5N1 human cases and deaths worldwide 1 January 2003 - 31 August 2010.



Source: WHO.[15]

[15] Available at: http://gamapserver.who.int/mapLibrary/Files/Maps/Global_H5N1inHumanCUMULATIVE_FIMS_20100831.png [accessed 2 December 2010]

1.2 Thesis structure

Examining the situation from a global perspective, and in Indonesia, one of the world's most badly and persistently affected countries, this thesis investigates why the internationally driven response to the Influenza A/H5N1 virus has been challenged. The period under investigation covers 2005 to 2010, and involved a set of interviews with international actors in London, Brussels, Geneva, Rome, New York and Washington DC in 2008, and a wider set of interactions over 22 months spent in Indonesia between 2008 and 2010. The thesis argues that whilst risk can be conceptually and empirically demonstrated to be multidimensional and fluid, an assemblage of historical, political, institutional and knowledge-power processes (Lupton, 1999), the international organisations designing and implementing the response are driven by reductive epistemological positions, and institutional arrangements, that treat the virus as a phenomenon of nature, which can be controlled by science and rationalist governmental interventions. As a result, insufficient emphasis is given to cultural, social and political factors which are demonstrated to have been centrally involved in the emergence, spread and persistence of the virus.

The thesis is organised into four sections. The first section, chapters 1 – 3, introduces the H5N1 virus, the global concern it has generated, and the Indonesian terrain. Chapter 2 outlines a constructivist conceptual position, and argues that conceptually risk and modernity have multiple dynamic hybrid forms, and that confusions and power-laden contestations regarding different constructions are inevitable. This chapter also shows how governmental and scientific rationalities are socially and institutionally constructed, and just one of a variety of ways of understanding H5N1 risk. Chapter 3 describes a multi-sited ethnographic methodology, and identifies issues associated with my position in the research.

The second section includes chapters 4 – 6. Chapter 4 first analyses constructions of risk and modernity among international actors and networks, and relates them to international policy responses. Scientific knowledge and reductive modernist principles are found to be dominant, with co-constructions of knowledge and policy resulting in an emphasis on quantitative, reductive approaches to risk assessment and management. Chapter 5 describes the Indonesian political and cultural contexts, contrasting these with the approaches of the organisations leading the response. Chapter 6 shows that whilst modernist principles and reductive co-constructions are evident in the formation of the national policy response, in policy implementation, and among those who keep poultry, or are involved in the poultry industry, including consumers, constructions of risk and of modernity are dynamic, hybrid and inter-related.

The third section, chapters 7 – 9, develops three empirical case studies of the response to H5N1 in Indonesia between 2005 and 2010. Exploring the multi-directional processes that occur when 'global' policies and practices encounter 'local' social and political settings, and vice versa, each chapter focuses on one distinct aspect of the response: poultry market chain restructuring, viral surveillance, and risk communications. In each case, the major actors and networks are identified, and their constructions of modernity and H5N1 risk examined. Central questions include: what constructions of risk and modernity emerge, and how are they related? What historical, political, institutional and knowledge-power processes are relevant in these constructions? Where and how do different constructions emerge, and what types of knowledge, negotiations and power relations are involved in their intersection? Finally, how do these constructions hybridise and what are the results: conflict, confrontation, resistance, compromise, compliance, co-option, or other mixtures?

The final section, chapter 10, provides a set of reflections and conclusions. Given the conceptual plurality of risk and modernity, and the multiple overlapping, interacting hybrid constructions that have been empirically demonstrated of both in the case of H5N1 in Indonesia, a significant challenge to the H5N1 response is shown to arise from the tendency of a rationalist, science-based, governmentally-orientated response to treat nature as a matter of separate, fixed identity. Viewable as nature, politics and/or discourse, the virus in action in Indonesia shows that any divide between nature and culture, and/or knowledge and power, is artificial and deceiving. The basic premise of Enlightenment-based approaches to modernity as represented by the internationally led response is therefore flawed. An effective and equitable response requires not just an understanding of the scientific nature of the virus, but also of the cultural, social and political environments in which the virus is in action, and the interactions between the two.

1.3 Studying the issue

Whilst a significant body of published academic work concerned with bio-medical aspects of H5N1 exists, few studies address social and political issues. A search of the Scopus database,[16] for example, for 'H5N1' (to 28 July 2011) returns 4,884 articles categorised under life sciences and health sciences, and just 314 articles categorised under social sciences.[17] Within social and political science studies, the largest body of work considers H5N1 within the emerging field of global health diplomacy, an amalgam of international relations and public health policy,

[16] See: http://www.info.sciverse.com/scopus/scopus-in-detail/facts [accessed 28 July 2011]
[17] A similar search of the PubMed (US National Library of Medicine National Institutes of Health) database for 'H5N1' returns 4,146 medically related articles.

examining Indonesia's decision in December 2006 to cease sharing H5N1 virus samples internationally in particular, and the enactment of new international health regulations in 2005 (Elbe, 2010; Fidler, 2007; Fidler and Gostin, 2006). Another strand of social science research sets H5N1 in the context of planning for and managing pandemics (Bish and Michie, 2010; Hairon, 2007), and another thinner, often psychometrically orientated, strand focuses on H5N1 'risk perceptions' (Fielding et al., 2005).

Few ethnographic or anthropological studies exist. An exception, from Indonesia, is Lowe's (2010) investigation into how the virus, wild birds, poultry and people combine to create a dynamic 'multispecies cloud'. A special issue of *Anthropology & Medicine* (April 2008) considers H5N1 in east and south-east Asia, developing a 'biosocial' rather than epidemiological approach, and calling for further multi-disciplinary investigations into the interactions of biological, social and ethical factors in local worlds (Kleinman et al., 2008). In the same issue, among two papers drawn from China (Liu, 2008; Zhang and Pan, 2008) and two from Thailand (Auewarakul et al., 2008; Chuengsatiansup, 2008), Padmawati and Nichter (2008) offer a pilot study investigating popular perceptions of, and the community response to, H5N1 in Central Java, Indonesia. Finding significant differences of opinion regarding blame and responsibility for H5N1 transmission and the degree of risk posed to humans, the paper proposes that different forms of 'practical logic' motivate backyard farmers and commercial poultry farmers, who are differentially influenced by mass media, government programmes, foreign aid and rumours. Demonstrating how poultry rearing and consumption practices have changed little following the arrival of H5N1, the paper calls for further multi-sited ethnography and research into the politics of funding, with a view towards establishing clearer lines of communication and mobilising mutual assistance.

Similarly focused, but with study sites in Hong Kong, Guangzhou, Vietnam and Thailand, Liao et al. (2009) examine the low take-up of HPAI preventative practices, and investigate the effects of differing beliefs concerning why H5N1 outbreaks happen, and what should be done to control them. They find that those living with poultry in rural areas have a keen sense of infection and vulnerability; that HPAI is not seen as a new disease; that changes in the weather and poor husbandry are widely consider to be causal factors; that commercial behaviour is often seen as lax and misguided, and thereby culpable; and that a significant sense exists among urban dwellers of having 'discovered' HPAI, and them feeling more threatened by it than those living in rural areas. They conclude that for planning effective health behaviour change programmes, 'a deeper understanding of the perceptions of risk, biases, attributions of cause, and both facilitators and barriers to change is needed' (p.579).

Alongside academic presses, the OIE and the WHO provide technical data and analysis on H5N1, and the FAO provides technical data, a newsletter (*AIDEnews*) and a broader series of studies concerned with animal health, strategy and policy, and socio-economics.[18] Within this ambit, Sumiarto and Arifin (2008) offer a useful overview of the economics and actors involved in the Indonesian poultry sector, and a review of the situation created by H5N1 up to 2008. They suggest that mitigation practices have failed to control the virus, and that the most significant economic impacts have been on small poultry farmers, which account for 70 per cent of Indonesian poultry production. Pointing to uncontrolled trade, poor surveillance of industrial farming, low bio-security at farms, slaughterhouses and markets, and limited vaccine coverage as being responsible, as well as common handling practices for sick or dead chickens, administrative decentralisation, and scavenging ducks, the study concludes that the situation is critical, and calls for further research into perceptions of control among specific stakeholders, including local autonomous policy makers.

None of this literature addresses how H5N1 risk is constructed and contested; nor the complex interactions of science and policy involved in responding to H5N1. Some of these issues have been addressed in the context of other zoonotic diseases. Hinchliffe (2001) examines agricultural-industrial spaces and the scientific and policy practices associated with the British Government's 1998 - 1999 Inquiry concerning the emergence and identification of, and response to, Bovine Spongiform Encephalopathy (BSE) and variant Creutzfeld-Jakob Disease (vCJD). Drawing on Rheinberger's investigations of 'epistemic things' – objects 'whose unknown characteristics are the target for experimental inquiry' (1997:238) – Hinchliffe stresses that 'one science' is unlikely ever to unequivocally inform policy, and that as scientific and epistemological pluralism is unavoidable, scientific knowledge claims will inevitably be accompanied by uncertainty. A forceful argument is subsequently presented that the BSE crisis came about, at least in part, because the mutable and contested nature of the disease was not acknowledged, and given a tendency to promote scientific and technical solutions when faced with open-ended political problems, the regulations imposed by government were overly reliant on advice from technical and scientific experts. BSE has also been addressed in a policy context by van Zwanenberg and Millstone (2005), and Millstone (2009) has scrutinised the entwinement of science and policy making in the context of food safety and regulation. Similar themes are considered by Dry and Leach (2010) in a wider investigation of epidemics, which explores the multiple, politicised constructions of risk and uncertainty associated with

[18] See: http://www.fao.org/avianflu/en/index.html and http://www.hpai-research.net/index.html [accessed 5 October 2011]

particular diseases in particular contexts. This includes a chapter on H5N1 avian influenza surveillance (Scoones, 2010b). Scoones (2010a) also provides a political economy perspective, specifically addressing avian influenza globally and in four countries in south-east Asia, which includes a chapter on avian influenza in Indonesia (Forster, 2010).

This thesis is related to the latter studies but takes the empirical investigations in Indonesia further, and develops a deeper and more sophisticated conceptual analysis. Concerned with the charged and changing relationships between nature and culture, and science and politics, this thesis accepts both the subjectivity and agency of micro-organisms engaging with humans, and the inevitability of 'biopolitical' emergences (Kirksey and Helmriech, 2010). It intends to respond to the calls made in existing literature for guidance in responding to the H5N1 epizoosis by bringing a conceptual perspective to bear on a policy question: why has the response to H5N1 been challenged in Indonesia?

In doing so, this thesis intends to contribute to understanding better and more effectively responding to a wider range of disease threats associated with what has been called 'the third epidemiological transition' (Barrett et al., 1998). Following first the rise in infectious diseases that accompanied the arrival of human settlement, agriculture and animal husbandry in the Neolithic period, and second the shift from infectious to chronic disease that is associated with industrialisation and other processes of modernisation in the 18th and 19th centuries, this third transition is characterised by novel and re-emerging pathogens associated with accelerating globalisation and the industrialisation of agriculture (c.f. Delgado et al., 1999; Gulati et al., 2005). Between 1940 and 2004, 335 new infectious diseases were detected globally, over half of which (60.3 per cent) were zoonoses – diseases resulting from pathogens transmitted from animals to humans (Jones et al., 2008:990). Such zoonotic Emerging Infectious Diseases (EIDs) include Marburg and Ebola hemorrhagic fevers, Nipah virus encephalitis, Lassa fever, SARS, and HIV/AIDS. The Lancet (2004:257) suggests that 'all new infectious diseases of human beings to have emerged in the past 20 years have had an animal source'. Glinski and Kostro (2005) argue that 75 per cent of future human epidemics will result from zoonoses. Against this background, the H5N1 virus can be considered not only to result in 'one of the most devastating animal diseases in the world',[19] but also to serve as an important example of a major and growing threat to global human health.

[19] Source: Ilaria Capua, Head of Virology Department, Istituto Zooprofilattico Sperimentale delle Venezie. Presentation at Sixth International Ministerial Conference on Avian and Pandemic Influenza, Sharm el-Sheikh, 26 October 2008

1.4 Why Indonesia?

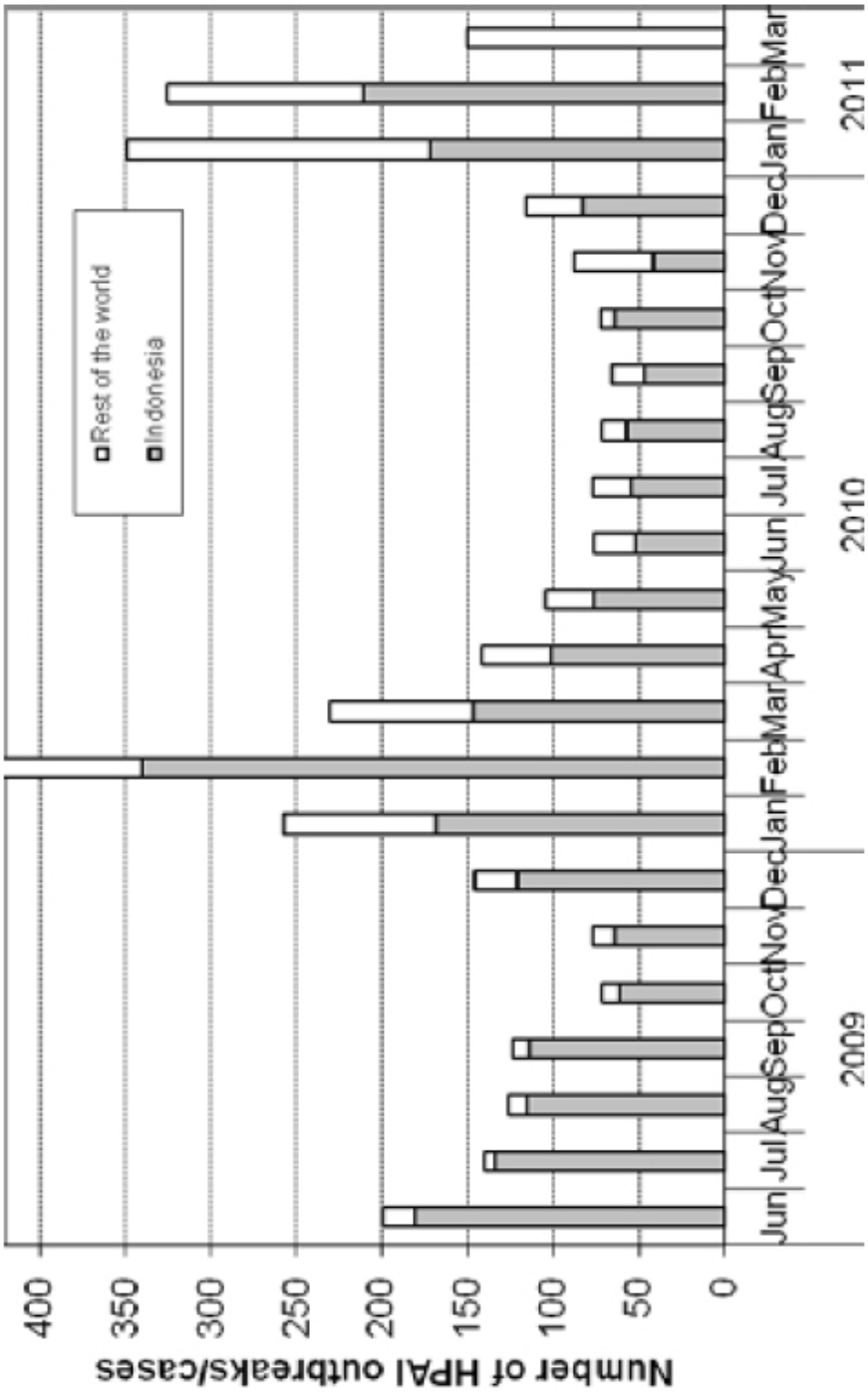
Indonesia was selected as a study site for a number of reasons. These fall into two main categories. First, the experience the country has with the H5N1 virus, and as a focus of an extensive internationally led response; second, the social, political, economic and historical context of the country was expected to provide a usefully contrasting set of constructions of risk and modernity to set against those of the internationally led response. Indonesia, offering stark contrasts between centre and periphery, town and country, rich and poor, provides a rich and varied set of lived experiences to examine H5N1 in action. As noted above, Indonesia has been badly and persistently affected by H5N1,[20] and the virus has been considered endemic across the major islands of Java, Sumatra, Bali, and most of Sulawesi since September 2006.[21] The virus was first detected in central Java in mid-2003, and was reported after a delay by the national government to the OIE in January 2004. In 2004 and 2005 the virus spread to 31 out of 33 provinces, extending over a complex archipelago that stretches over 5,000 km from east to west. To date, an uncounted number of chickens – in the range of hundreds of millions – have died as a result of the virus, and the economic and social consequences of the epizoosis have been significant, particularly among the rural poor. As early as August 2005, economic losses were estimated at over $500 million, with over 2.5 million workers in the poultry industry affected (Priosoeryanto et al., 2005:146).[22] Figure 3, below, shows the high proportion of global outbreaks reported recently from Indonesia.

[20] Source: OIE. Available at: http://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/graph_avian_influenza/graphs_HPAI_30_03_2011.pdf [accessed 5 April 2011]

[21] Source: OIE. Available at: http://www.oie.int/animal-health-in-the-world/update-on-avian-influenza/2006/ [accessed 5 April 2011]

[22] Throughout this paper currency conversions have been presented at an indicative Rp10,000/US$1. Actual rates have varied from Rp 11,980/US$1 in January 2009 to Rp9,400/US$1 in December 2009, for example.

Figure 3: H5N1 HPAI poultry outbreaks in Indonesia (compared to the rest of the world) June 2009 - March 2011.



Source: FAO EMPRES H5N1 HPAI Global overview.[23]

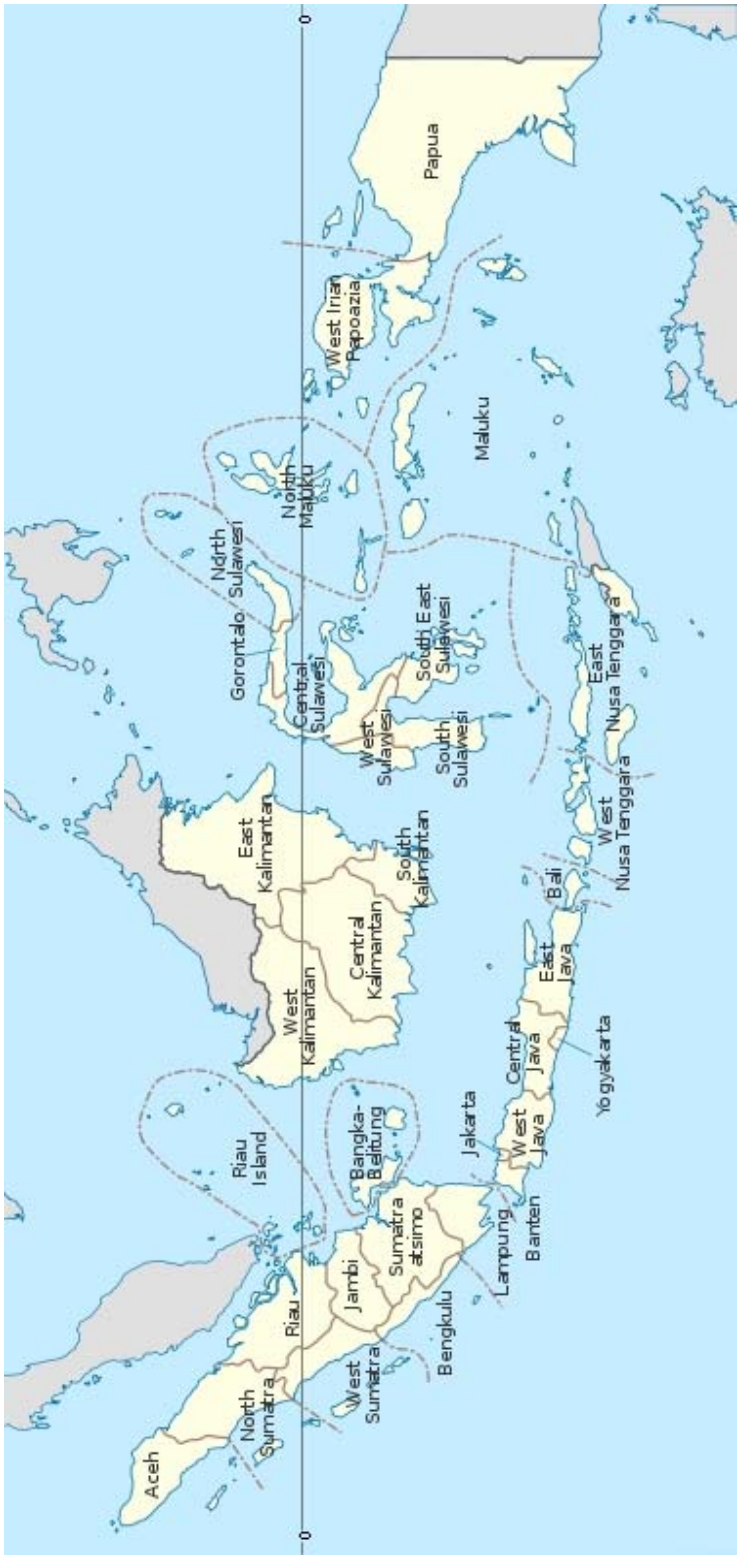
[23] January/March 2011 Issue No. 27 Fig. 7 p.5

The first human H5N1 case in Indonesia was confirmed in June 2005, and by 22 June 2011, 178 cases and 146 deaths had been laboratory confirmed, mainly among children and young adults.[24] This is the highest number in the world, and presents a remarkably high case-fatality rate of 82 per cent.

Indonesia has also received the largest financial commitment to fight H5N1 avian influenza from the international community, totalling over US$175 million, with US$138 million disbursed (UNSIC/World Bank, 2010:132). As mentioned above, this is a largely multilateral intervention driven most significantly by fears of the effects of a global influenza pandemic on the economies and populations of the global North. The organisations charged with designing the response – primarily the OIE and the UN FAO and WHO – have advocated, and are implementing, a response in collaboration with national and sub-national authorities that focuses on global standards and technical norms concerning disease surveillance, movement controls, vaccination, and culling. Simultaneously, a wide range of communications initiatives, led by the United Nations Children's Fund (UNICEF) and US Agency for International Development (USAID) contractors, have taken the perceived dangers of the disease – in poultry and in humans – to the masses. The case of H5N1 in Indonesia therefore presents a powerful example of a globally orientated response, characterised by a modernist, universalistic rationality, being deployed into what may be cast as a peripheral territory, less prepared, able or willing to deal with the problem.

[24] Source: WHO. Available at: http://www.who.int/csr/disease/avian_influenza/country/cases_table_2011_06_22/en/index.html [accessed 15 July 2011]

Figure 4: Indonesia map showing provinces.



Source: Wikimedia Commons.[25]

[25] Available at: http://commons.wikimedia.org/wiki/File:Indonesia_provinces_location_map-en.svg [accessed 2 February 2011]

With more than 237 million inhabitants spread over some 6,000 islands, Indonesia is the world's fourth most populous country, and one of the geographically, ecologically and culturally most complex. A map of the country is shown in Figure 4, above. Over 300 ethnic groups speak over 700 languages and dialects. Chicken is Indonesia's favourite meat, and over one billion birds and 17 billion eggs are estimated to be consumed each year nationally.[26] Beef is more expensive, and pork is not popular among the country's Muslim majority. Extrapolating from 1997 numbers (the last year for which aggregate figures are available), Simmons (2006:437) calculates a standing national poultry population of just under two billion. The poultry industry is concentrated near population centres on Java, which has a population density of over 1,000 people per square kilometre (Rajagukguk and Toha, 2009:2). The industry, comprising feed, day-old-chick (DOC) and pharmaceutical supply, as well as broiler (for meat) and layer (for eggs) farming, and 'downstream' processing and marketing activities, is economically powerful, worth Rp65 trillion (approximately US$6.5 billion) annually, representing one per cent of national Gross Domestic Product (GDP) in 2009.[27] Alongside commercial broiler production, over half of all households keep poultry at home. These free-ranging birds provide celebratory food, a commodity for the poor to trade in emergencies, and can play important cultural roles (Padmawati and Nichter, 2008). All production is currently consumed domestically, and with minute imports, Indonesia stands remarkably isolated with respect to international trade in poultry meat and eggs, and is largely unconcerned by international phytosanitary standards.

Indonesia also provides an unusually wide variety of hazards to investigate the constructions of risk individuals and groups generate around other dangers, and to set the H5N1 threat in context. Experiencing frequent volcanic eruptions, earthquakes and tsunamis, the country has been referred to as a 'supermarket of disasters' (James, 2008:424). Tropical storms, flooding and landslides also occur regularly, and eastern areas are drought prone. Indonesia also experiences continuing social and political unrest. With settlements in Aceh (in 2005) and East Timor (in 1999), the situation has improved significantly recently, but conflict continues in areas of Aceh, Maluku, Poso, and Sambas (West Kalimantan) (Davidson, 2009). Travel can also appear dangerous. Aircraft crash and ferries sink regularly, and road fatalities are common. Although Indonesia made substantial improvements in the 1970s and 1980s (Kristiansen and Santoso, 2006), with health spending low at US$55 (current international

[26] Source: Bayu Krishnamuthi, Chief Executive KOMNAS FBPI. Presentation at 10th National Veterinary Conference of the Indonesian Medical Association, Bogor, 20 August 2008.
[27] Source: Indonesia Commercial Newsletter, August 2009. Available at: http://www.datacon.co.id/Livestock2-2009.html [accessed 22 March 2010]

dollars) per capita in 2009, representing only 2.4 per cent of GDP, deadly disease is prevalent, in particular malaria, pulmonary tuberculosis, dengue fever and diarrhoeal diseases (World Bank, 2009). In 2005, 140,000 deaths from chronic tuberculosis were reported, ranking Indonesia's death toll third globally, behind China and India. Typhoid, tetanus and rabies are also continuing problems, as is child under-nutrition in some regions, and significant outbreaks of Dengue Haemorrhagic Fever occurred in 2004 and poliomyelitis in 2005.[28] In this context, H5N1, as one diplomat respondent put it, is 'just a little rattle deep in the Indonesian machine'.[29] The stark fact is that many Indonesians face more threatening and immediate day-to-day challenges to health and well-being than an influenza virus.

Politically, Indonesia is a dynamic young democracy emerging from 40 years of autocratic rule (Elson, 2008; Ricklefs, 2001). After more than 300 years of colonial Dutch control over much of the territory, independence, which was recognised in 1949, was followed by the charisma and incompetence of Sukarno's presidency (1963 - 1968), and the state corruption, political repression, economic collapse and finally the rise of people power during Suharto's presidency (1968 - 1998). Today's political environment can be characterised as a democracy in formation. This adds to the relevance of Indonesia as a study site. As will be discussed below, trust relations with respect to expertise and authority are key in the construction of risk, and these are fluid and fragile in Indonesia. At the national level, and at that of some 456 autonomous districts and municipalities, there is little trust in government. Despite good intentions, all post-1998 administrations have suffered a degree of continuity with those of the past, which were characterised by institutionalised corruption, opaque processes and collusion with business interests (Hadiz and Robison, 2005). The international community leading the response to H5N1, operating in pursuit of a global public good, advocates a rationalist approach focused on universalist scientific and technical principles, whilst presuming a Weberian bureaucracy operating in the context of a liberal democracy. However such an ordered state of affairs exists inconsistently in the technology of government in Indonesia, and the situation is complicated by a long-established view in Indonesia of the international realm as distant, unreliable, and powerful, and essentially unsympathetic to Indonesian interests (Weinstein, 1971). In 1965, for example, Indonesia, under President Sukarno, was the first country ever to withdraw from the UN. In these circumstances, many of the international organisations involved in responding to H5N1 in Indonesia have had to work hard simply to justify their presence in the country.

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[28] Source: WHO. Available at: http://www.who.int/countryfocus/cooperation_strategy/ccsbrief_idn_en.pdf [accessed 4 January 2011]

[29] Interview, Jakarta, 28 August 2008

In addition to events associated with a dramatic geography and recent political history, Indonesia is also experiencing dramatic transformations associated with urbanisation, industrialisation, the growth of mass media, and increasing worldwide commercial and cultural linkages. This provides a rich and varied set of contexts to investigate constructions of modernity in the territory. The 2008 World Development Report (IBRD/World Bank, 2007:4) categorises Indonesia as a 'transforming country'. Adult male literacy is reported to be 92 per cent, and female 83 per cent.[30] Ranked 107 out of 177 countries in the UNDP's 2007/2008 Human Development Index, GDP per capita was $3,471 in 2006 (PPP, current international dollars), marking Indonesia as a lower-middle income country.[31] In 1980, 22 per cent of the population lived in urban areas compared with 48 per cent in 2005 (Roberts and Kanaley, 2006:14) and today agriculture employs only 44 per cent of the working population, compared with 38 per cent in services (Fabiosa, 2005:2). These trends looks set to continue. Young people (15 to 25 years old) accounted for 45 per cent of Indonesia's population in 2006 (Suryadarma et al., 2007), and the picture is bright economically. One of the fastest growing economies in Asia, in 2010, in the face of a global financial crisis, GDP grew by 5.8 per cent, and Indonesia was the only G20 country to lower the ratio of debt to GDP (Wie, 2010). In the first half of 2010, the country recorded a surplus of $9.63 billion in foreign trade, with exports and imports both surging, inflation running at between four and six per cent, and interest rates stable at 6.5 per cent. In the fourth quarter of 2010, the stock market hit all time highs with the Jakarta Composite Index posting gains of more than 40 per cent since January, and tripling since a recent low in October 2008. In the Economic Forum Global Competitive Index, Indonesia moved up 10 places to 44th place, ahead of Vietnam, India, and Italy (Schwab, 2010:29).

The Indonesian case, therefore, is also important because of the growing stature and influence the country has on the international stage, and the central position it assumed in the emerging field of global health diplomacy, when, in late 2006, the then health minister decided that the country would stop sending crucial human H5N1 virus samples to the WHO for analysis, and would only resume if there was national control over where viruses originating from Indonesia went, and a share of profits resulting from any commercialisation.[32] With

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[30] Source: International Labour Organization. Available at: http://www.ilo.org/public/english/region/asro/bangkok/skills-ap/skills/indonesia_literacy.htm [accessed 12 December 2008]

[31] Source: UNDP. Available at: http://hdr.undp.org/en/reports/global/hdr2007-2008/ [accessed 4 February 2009]

[32] See: "Sovereignty' That Risks Global Health' by Richard Holbrooke and Laurie Garrett, Washington Post, 10 August 2008.

Indonesia showing increasing leadership in regional and global affairs (Kimura, 2011), and well regarded as the most stable and pluralistic democracy in south-east Asia, as well as the only country in the region rated as 'politically free' by Freedom House,[33] its stance and performance on global issues is increasingly important, as is understanding the underlying attitudes and motivations within the country.

1.5 Conclusion

Indonesia is an ideal place to study the arrival, spread and persistence of the H5N1 virus, and to investigate the consequences of a substantial, globally designed and globally driven set of response interventions. As this chapter has shown, the illness influenza, and the pathogenic virus, demonstrate many uncertainties and gaps in bio-medical knowledge. The chapter has also described the emergence, spread and characteristics of the novel virus sub-type H5N1, set it in the context of other diseases emerging at the human-animal interface, and examined the existing literature. A gap has been determined in the latter regarding conceptual analyses relating to H5N1 in the context of the interactions of science and policy making. The chapter continued to describe the concerns of international actors, which are dominated by a construction of the risk associated with H5N1 as a deadly and financially costly global influenza pandemic. These concerns have been contrasted with those in Indonesia, one of the world's epicentres of H5N1 transmission, a large, complex, and rapidly developing country, where many people keep poultry, natural and other hazards abound, representative democracy is new, and the virus has proved persistent in the face of significant efforts to eradicate it. The next chapter describes the conceptual background, which is used later in the thesis to analyse why the response to the virus has been challenged.

[33] See: http://www.freedomhouse.org/template.cfm?page=22&country=7841&year=2010 [accessed 5 November 2010]

2. Conceptual background

> 'Once again heads of state, chemists, biologists, desperate patients and industrialists find themselves caught up in a single uncertain story mixing biology and society.'
>
> (Latour, 1993:2)

2.1 Introduction

The objective of this thesis is to bring a conceptual perspective to bear on the question of why the response to the H5N1 virus has been challenged in Indonesia. Conceptually, risk and its entwinement with the idea and practices of modernity, appear to be central, and this chapter is primarily concerned with these two concepts and their links and relationships. My objective is to explore and map the theoretical terrain in order to determine a set of relevant questions for empirical enquiry.

The chapter first outlines three theoretical approaches which consider risk as a natural, a social and a narrated phenomenon, and argues that these different approaches produce different understandings of risk. A realist epistemology is shown to produce reductive, universalistic forms of risk that do not predict, explain, or represent fully the plurality of risk in the world. Particularly with respect to environmental issues and those associated with human health, reductive scientific understandings often vary from understandings found in broader populations, and contestations over knowledge and authority may emerge. In contrast, a constructivist position, which suggests that knowledge rests on social factors, not on an independent reality, predicts multifarious risks, and explains plural risk constructions through plural world views. Phenomena are not determined by the nature of things, but are culturally constructed. Following Hacking (1999), this thesis accepts that thoughts do not refer to an objective reality, but to an assortment of meanings, discourses and representations. In these terms, risk becomes an 'assemblage of meanings, logics, and beliefs cohering around material phenomena giving these phenomena form and substance' (Lupton, 1999:31). Risk is therefore understood to be multidimensional and fluid, the product of historical events and social forces. From this constructivist position, an initial set of enquiries emerge for this thesis relating first to detecting any variations in risk constructed around the H5N1 virus, and second, to any associations any particular constructions may have with particular social groups. In the event of dissonance or contestation regarding different risk constructions, a third line of enquiry emerges concerning investigating the knowledge and power relations associated with the domination, exclusion or suppression of any particular constructions. Such questions concerning the relations between different 'versions' of risk are relevant even when a purely

constructivist stance is not taken, pointing as they do to the co-creation of risk understandings with institutions and power (e.g. Millstone, 2010).

The chapter goes on to draw on the 'Risk Society' thesis (Beck, 1992; 1999) which proposes that novel types of risk occur in what is purported to be a novel period in human history. The risk society thesis suggests that 'modernisation risks', which emerge most significantly when complex technological systems interact with broadly cast environments, are fundamentally different from risks encountered in the past, and have become the organising principle of a globalised 'high modern' or 'reflexive' society. The risk society thesis is, however, not adopted in full. This thesis takes issue with its universalistic approach, its determination that human history has discrete eras, and its assumption that the concept of 'modernity', and indeed of any 'modern project', has constancy across time and space. Incorporating a 'regional modernities' approach, however, which suggests that globalisation is a variable process produced in multiple locations with multiple directions of flow, and that 'local' histories are at work in any 'modern' context (Sivaramakrishnan and Agrawal, 2003), allows this thesis to argue that if risk is a social construct, so is modernity. If risk is dynamic and fluid, constructed differently by different groups, and subject to plays of power, so is modernity. A second set of enquires therefore emerge relating first to investigating prevalent constructions of modernity and their relations and relevance to H5N1 risk constructions, and second, given that the risk society thesis concurs with cultural and discourse orientated approaches in pointing to relationships between governing institutions and governed citizens as being key in constructing risk, to investigate the knowledge and power dynamics associated with any 'expert' assemblages that claim authority with respect to the H5N1 virus, together with any responses to them.

With the investigatory focus set on constructions of modernity and the relations of expertise and authority in understanding the risks associated with H5N1, the third section of the chapter considers the relations between nature, culture and modernity that are entwined with the politics of H5N1 and responses to it. Here the work of Bruno Latour (1993) is helpful. Latour argues that since the European Enlightenment in the 18th century a false dichotomy has been drawn between nature and culture, which both denies and creates 'quasi-objects', hybrids of nature and culture, that can display characteristics of both structure and agency, and for the purposes of the following discussion I will assume that Latour's characterisation of the European Enlightenment is correct. This approach offers an explanation of risk's complex conceptual plurality and, more specifically, insight into the multifarious risks constructed around the H5N1 virus. It also brings into useful focus the complex mingling of epistemological

and ontological issues associated with responding the H5N1 virus in Indonesia. Finally, the chapter draws these conceptual themes concerned with risk, modernity and globalisation together to provide the conceptual approach for the chapters that follow.

2.2 Constructing risk

If, as discussed in chapter 1, Neustadt and Fineberg call influenza a 'slippery' disease, and the influenza virus 'capricious', the concept of risk can also be appreciated as both 'slippery' and 'capricious'. Etymologically a conflation of danger, possible gain and exploration, risk (from the Italian *risicare*, to chance or dare) has a complex epistemological genealogy (Renn, 2008). Rooted in mathematical work on probability, technocratic approaches to risk are dominant in many domains today. This approach, which defines risk as the probability of harm, found use in matters of trade, contracts and insurance in the 18th and 19th centuries, and is now embedded in decision-making associated with insurance, and investment management and financial markets (Bernstein, 1996). It came to prominence in Europe and the USA following World War II, particularly as it engaged in assessing environmental hazards in the context of public health and government regulation. The prevailing view was that risk was a matter for expert authorities, which would scientifically assess hazards, devise rational strategies for managing them, and then communicate with a passive lay public (Short, 1984). Individuals, however, and non-expert groups often had different ideas. Psychometric studies find significant differences in human responses between voluntary and involuntary risks, visible and invisible risks, risks with and without benefits, risks affecting large and small numbers of people, and the undesirability of states such as dread and fear, irrespective of any harm actually caused (e.g. Starr, 1969). Risk can also be amplified, or attenuated, as information is transferred by media, interpersonal networks, and other channels (Kasperson et al., 1988). Most humans, it can be shown, generally ignore familiar low probability risks (e.g. crossing the road), suffer – or enjoy – an optimism bias (it won't happen to me) and often ignore risks if there is no one to blame (e.g. low levels of radioactivity caused by naturally occurring radon).

Even within a functionalist framing, then, which assumes an objectively real and stable world, and the possibility of investigations that produce value-free knowledge, it is hard to argue that risk is best addressed as objective and quantifiable, and amenable to scientific measures and methods. Aggregate calculations simply do not suit the individual, and definitively aggregating preferences in a plural society is impossible (Arrow, 1971). We generally run our lives according to heuristics – rules of thumb – creating 'personality profiles' of individual risks which are most often related to grades of familiarity and controllability, and

are not necessarily congruent with scientific rationality (Slovic, 1987). Humans are poor at probabilistic reasoning, particularly processing uncertainty in cases of low probability, high consequence events where the effects might be delayed by a generation or more (Otway and von Winterfeld, 1982). Rare, catastrophic and long-term risks such as severe influenza pandemics are largely incomprehensible to us.

A wide range of anthropological and social science research also points to the limitations of a universalist definition of risk that disregards contextual factors. Positing both the environment and risk as social constructs, Wildavsky (1979) shows that people are prepared to suffer harm if they feel it is justified, but will reject it if it is imposed. In other words, context matters: the types of risk society selects are functions of the attributes of the social structure. Individuals and groups with different world views will have different risk views (Plough and Krimsky, 1987) and risks are defined, perceived and managed according to principles inherent in particular forms of social organisation (Rayner, 1992). Rejecting the 'aura of science and precision', Mary Douglas's famous examination of different understandings of risk in different cultures (1992) suggests that different societies fear different sorts of threats which correlate with differences in social structure. This theory holds that people value things they participate in or identify with, and suggests a functionalist explanation: social structures generate attitudes that serve to uphold the social structure. What one sees depends, therefore, on where one stands. Common values lead to common fears, and social organisations will emphasise the risks that hold the group together. Risk is a social construct which survives due to its usefulness in social systems.

Talking about power

For Douglas, institutional structure is the ultimate cause of risk, and she suggests that to understand public reactions to risk, the focus ought not to be on the danger, but on the institutions. Following Luhmann (1993) in accepting decisions made within the social structures of institutions as key, the relationships that occur between decision-making organisations and affected individuals become critical, and the field Foucault (1991)[34] termed 'governmentality' becomes relevant in analysing and understanding it. Operating beyond the 'enclosed disciplines' of specialised institutions, and defined as the 'conduct of conduct', or 'the attempt to shape human conduct by calculated means' (Li, 2007:5), a Foucauldian analysis suggests that risk may be constructed as a means to legitimise power by creating fear and

[34] first published in 1979

forcing norms, defined by the most powerful interests, on others (Renn, 2008). Discourse – words and language constituting social action – is fundamental for Foucault (1998).[35] He shows how it produces and defines objects of knowledge, explains how knowledge has the power to make itself true, and how power circulates and changes over time: different conditions of truth have applied in different periods of history. In these circumstances, the assignation of 'protective' functions to any institutions, such as those, for example, needed to 'secure the welfare of the population, the improvement of its condition, the increase of its wealth, longevity, health etc.' (ibid:100) calls for close examination. Where do, for example, the boundaries of action lie for the state when the life of the population is under threat?

One consequence of a governmental rationality is the requirement to render populations 'thinkable, measurable, differentiated and sorted into hierarchies' (Stenson and Edwards, 2001:74): to measure, count and categorise them. Beyond this, as not every individual in a population can be effectively or efficiently monitored constantly, government can operate by setting conditions 'artificially so arranging things so that people, following only their self-interest, will do as they ought' (Scott, 1999:202),[36] and relations related to discourse and power may become part of government strategy to promote 'individual responsibility' as an organising ethos (Castel, 1991; Dean, 1999; Rose, 1999). This analysis opens up a potentially dark construction of the Enlightenment project. A logic of domination and oppression may hide behind 'enlightened' rationality (Adorno and Horkheimer, 1972). Harvey (1990:13) suggests that 'the suspicion lurks that the Enlightenment project was doomed to turn against itself and transform the quest for emancipation into a system of universal oppression in the name of human liberation'.

A governmental rationality also brings into focus claims to truth and authority. If knowledge is determined to rest on social activity, be historically situated and contingent on context (Shapin, 1996), the objectivity of the method of science, and any universal qualities claimed for scientific knowledge, is challenged. Knowledge resulting from social activity is necessarily plural, and scientific knowledge is just one of any number of representations. With meaning attribution and the social world interacting, the legitimacy and political status of any action depends on the interaction, and plural constructions of it. Mitev (2005:76) suggests: 'Only intersubjective rules, not unchangeable truth or reality, give meaning to practices'. Considering a science-led world, Habermas (1980) was concerned that bureaucrats may become subordinate: deliberation may become framed by science rather than policy goals,

[35] first published in 1976
[36] citing Jeremy Bentham

and objectives may be set by, or arise from, forces other than politically accountable representatives. More specifically investigating the social practices of individuals transferring risk related decision-making to institutions, Jasanoff (1990; 2004) finds complex negotiations imbued with power relations, and warns of too much power being given to an ill qualified elite. Risk is therefore not only plural, but contestations, politics and power plays relating to different understandings of it are inevitable. Many fits are possible and the one arrived at is contingent (Hacking, 1999:73).

This thesis does not, therefore, seek to set 'expert' scientific knowledge against 'local' indigenous knowledge in any contestations over risk constructions. It is accepted that most 'local' knowledge, which is often described as 'holistic' rather than causality-oriented, is actually the outcome of the co-evolution and co-construction of various concepts of knowing which mix scientific and other knowledge (Hilhorst, 2004). Agrawal (1995) argues that there is no distinction between local and professional knowledge, or between indigenous and Western knowledge. Neither have clear cut boundaries. Knowledge creation is dynamic, evolving with contexts and circumstances. Sillitoe (2007) concurs, suggesting that the challenge is to embrace the different forms of expertise on offer rather than get trapped in 'expert' versus 'public' debates. Stressing that ecological and environmental issues are framed by variability, unpredictability and non-equilibrium dynamics, Mehta et al. (2001:1) also propose that both lay and expert knowledge is 'plural, partial, contingent, situated and contested'.

Real world matters

These are far from abstract, theoretical concerns. Brian Wynne (1996) reports on what can happen in the real world through studies of the interactions between UK government scientists and Cumbrian sheep farmers in the aftermath of radioactive release from Chernobyl in Ukraine in 1986. He found that the 'assumptions [of the scientific institutions] shaped the scientific knowledge' rather than being extra to it, and 'were built in as social prescriptions in the way science was institutionalised and deployed' (p.19). With the 'rational' approach of science assuming 'inconsistency, imprecision, or ambivalence to be manifestations of intrinsic feebleness' (p.41), much of the grounded content of the relevant lay knowledge was ignored because 'it was not formally organised in documentary, standarised and control-orientated ways recognisable to scientific culture' (p.37). In Cumbria, science was found not just wanting, but positively dangerous. Wynne makes clear the inevitable conditionality of knowledge, and the artificial, self-sustaining nature of the expert/social divide. Unless otherwise claimed, risk will have a meaning created and imposed by dominant social organisations. This is not

desirable, according to Wynne, because the public has a much richer conceptualisation than that of experts which reflects legitimate concerns that are typically omitted from expert risk assessments. Van Zwanenberg and Millstone (2005) draw similar lessons from the 1986 - 1996 Bovine spongiform encephalopathy (BSE) crisis in the UK. Knowledge bases and uncertainties change over time. Science cannot construct independently of historical, socio-empirical and political contexts. The boundary between science and politics is drawn differently by different people. The central issue is not trust, but legitimacy in policy making. Stirling (1999) too offers a comprehensive critique of the definition of a single monolithic scheme for determining regulatory options for the management of technological risk. Risk is accepted as having multiple dimensions, as is the fact that any appraisal of risk is as much about the systematic qualitative exploration of the consequences of divergent social values as it is about precise numerical characterisations of the physical impacts of the technologies. Factors of flexibility, resilience, adaptability and robustness must be considered too. Here it is better to be roughly accurate than precisely wrong. Notions of a unitary definitive concept of 'sound science' are highly problematic, and commercial and political judgements can be disguised, or masquerade, as such (Millstone et al., 1999).

The continued treatment of ignorance and uncertainty as if they were risk is an example of 'pretence at knowledge', suggests Stirling, acknowledging that this diminishes in the 'intermediate domain' between research and public dissemination. Science is a necessary but not sufficient condition for effective risk management. 'Early listening' and 'technology forcing' techniques are useful, if not vital, and voices of dissent are important considerations. A list emerges of requirements: broad based appraisals, fair comparisons of options, considerations of benefits and justifications, pluralistic discourses, stakeholder participation and social learning (Stirling, 2005).

There are, therefore, a multitude of theoretical positions surrounding risk. In this first section of the chapter I have contrasted risk as framed by an epistemological position which creates knowledge by objectively measuring nature, with a consideration of cultural theory, which suggests that as knowledge is not fixed, but is constructed by social groups, it changes according to purposes and interests. Many varied constructions and co-constructions of risk are therefore possible. An analysis based on discourse was then introduced, which suggests that risk may be constructed as a means to legitimise power, and can be deployed to suit particular interests. I argue in favour of a constructivist position, as a simple realist position fails to predict or explain risk's variety over time or across populations, and takes no account of power relations. An initial set of questions consequently emerges for this thesis. These are:

what groups are involved with the H5N1 virus and what risks do they construct around it? Do different groups construct risk differently, or are risk constructions similar? Are any dissonances or contestations evident over different constructions, or are any constructions, or related topics, dominant or excluded?

2.3 Globalising risk

Given risk's multiple and potentially contested nature, and the fact that the response to H5N1 is driven by globalised concerns, it is important to address the interrelationship between risk and globalisation. How are risk and modernity co-defined, in a globalising context? Here, initial direction is provided by the work of Ulrich Beck (1992; 1999; 2006) and Anthony Giddens (1990; 1991; 1999). This has examined in detail risk in the context of contemporary society and globalisation. Drawing on the example of northern Europe in the late 20th century, Beck argues that risk has become the fundamental organising principle of society. He defines risk as 'a systematic way of dealing with the hazards and insecurities introduced by modernization itself' (1992:21), and the 'Risk Society' as 'a phase of development of modern society in which the social, political, ecological and individual risks created by the momentum of innovation increasingly elude the control and protective institutions of industrial society' (Lash et al., 1996:27). At the individual level, Beck suggests that risk brings fundamentally different distribution logics into play with respect to class and strata positions: the risk society is concerned not with the production and distribution of 'goods' but with the production and distribution of 'bads' (1992:63). Distribution of risk, therefore originates from knowledge rather than wealth, and in the risk society the imperatives of need have given way to those of anxiety.

Both Beck and Giddens draw a distinction between a pre-modern world where risks result from natural hazards (e.g. earthquakes), and a modern world where risks result from human agency (e.g. radioactive leaks). Beck suggests that these novel 'modernisation risks' have a number of key characteristics:

- they are potentially unlimited in their spatial and temporal effects;
- they result from industrial and scientific development;
- they may escape immediate attention (e.g. radioactivity);
- it is hard or impossible to calculate the consequences of them;
- it is hard or impossible to attribute responsibility for them.

Modernisation risks, according to Beck, however, arise not only as a result of innovation in science and technology, but also as a result of the changing relationship between social agents

and social structure occurring in an era he refers to as 'reflexive' modernity, and what Anthony Giddens (1990) calls 'high' modernity. Giddens characterises this era as one showing increasing individualisation and more plural moral standards and knowledge claims. With individual agency increasingly challenging and shaping social structure, novel risks emerge as the public's faith in the modern project's ability to deliver progress through ideals such as rationality, efficiency, justice and science, declines. Giddens suggests that manufactured risks have transformed the modernisation process itself, and that as trust in industry, government and experts has failed, a state of reflexive modernisation has resulted, with mass media complicit in the process. The move to the modern and the concomitant growth of human knowledge, particularly as represented by science, creates new unpredictabilities, uncertainties, and incalculabilities, and it is now accepted that in many areas of enquiry, the more that is known, the more uncertain the future actually becomes.

Furthermore, Giddens posits, in reflexive 'modern' societies, individuals have more options and consider precedent less. By way of contrast, in 'traditional' societies, action needs to be considered less because choices are more largely predetermined by what has happened in the past. Released from structural constraint, new and innovative patterns of behaviour emerge in reflexive modernity. Life becomes viewed teleologically, deriving meaning and value from the future rather than the past, and the world becomes more open to transformation by human intervention. As action requires more analysis, however, uncertainty results, and this manifests as risk. In these terms, modernisation risks have less to do with any hazard – industrial, viral or other – and more to do with citizens' interactions what Beck refers to as the 'relations of definition': expert technical and government institutions which produce 'the rules and capacities that structure the identification and assessment of environmental problems and risks' (Goldblatt, 1996:166). Giddens points to the importance of relations involved between citizens and what he calls 'expert' systems, which he defines as 'systems of technical accomplishment or professional expertise that organise large areas of the material and social environments in which we live today' (1990:27). These too often have strong institutional aspects, and include professional practices and objects such as aircraft or monetary mechanisms, for example.

The risk society thesis offers an all-encompassing perspective, but one that has been widely critiqued. Given that societal and individual constructions of risk are highly heterogeneous, and that risk is not distributed evenly in time and space, the risk society thesis can be criticised for being universalistic, and for emphasising the ubiquitous, global distribution of undifferentiated risk (Denney, 2005). The sheer diversity of risk constructions

suggest that risk cannot simply be divided into natural hazards and manufactured risks which produce uniformly ordered responses from a population: what is considered a 'danger' or a 'hazard' in one historical or cultural context may not be in another (Lupton, 1999). A further set of criticisms suggests that the risk society thesis is limited by its unconditionally negative conception of risk as harm, its view that humans are innately risk averse, and that only an environment of zero risk is acceptable. Risk can offer benefits, and people can choose to take risks (Giddens, 1999; Lupton and Tulloch, 2002). The risk society thesis can also be criticised for setting scientific expertise and technically orientated risk assessments as diametrically opposed to the variegated 'local' knowledge of an undifferentiated mass population. As has been discussed, this precludes socially disaggregated processes of generating, processing and transmitting diverse forms of knowledge, and the existence of co-constructed knowledge that mixes 'scientific' and 'indigenous' sources of knowledge. Regarding Beck's unremitting focus on technical hazards facing more developed, industrialised countries and the condition of 'late' modernity in which they find themselves, it should also be noted that in the risk society it is assumed that a functional state exists capable of creating and running institutions that are receptive to an informed population able to evaluate, choose and articulate options. But lack of public trust in institutions is not an exclusively modern phenomenon confined to industrialised societies. In developing countries, Leach and Scoones (2006:43-44) warn of overstating 'the novelty of risk as a phenomenon, and the novelty of a mismatch between public perceptions and institutional regimes', arguing that 'risks, hazards and uncertainties have long been experienced in the constant interplay of ecological and bodily processes, capricious markets, government politics and international engagements'. In this thesis, therefore, I make use of some of the key ideas of the risk society thesis, in the context of analysing H5N1 risk in the context of globalisation and contemporary society, but accept its limitations.

Global modernities

Both Beck and Giddens link risk with globalisation. Given the apocalyptic and unbounded risks that concern Beck's thesis, this would appear inevitable: 'Risk society, fully thought through, means world risk society. For its axial principle, its challenges, are dangers produced by civilization which cannot be socially delimited in either space or time' (Beck, 1999:19). In *World Risk Society* (ibid:37) Beck proposes two perspectives: 'globalization from above' by way of international treaties and institutions, and 'globalization from below' by way of transnational actors (such as NGOs), which may challenge existing political organisations and interest

groups. Giddens concurs in arguing that globalisation has at least two directions of flow: one 'from above' which involves the movement of goods, capital, technological innovation and people across nation-state boundaries, creating a sense of the world as a single place; and another 'from below', involving not just NGOs and pressure groups, but also shared cultural forms which create the sense of the world as a single, global society: 'Globalisation... is not just 'out there' – to do with very large-scale influences. It is also an 'in here' phenomenon, directly bound up with the circumstances of local life' (1994:80-81).

Arguably, both these perspectives see modernity as having been invented in the West and transferred, initially through trade and colonialism, and more recently through independence movements, development processes, mass media and transnational capital, to less modern regions. As a model of the future, modernisation has often justified 'development': the encouragement by more developed nations, acting independently and in groups, of benevolent and progressive 'modernisation processes' in less developed regions. Cowen and Shenton (1996:x) suggest that this doctrine rests on the exercise of a benevolent 'trusteeship' - 'the intent which is expressed, by one source of agency, to develop the capacities of the other'. Other commentators posit this globalisation of modernity as a project of the industrialised North used to exploit the less developed South (Escobar, 1988; Ferguson, 1999). In the worst case, this 'homogenizing juggernaut of domination', with assumed 'centres of calculation' pitted against 'indigenous' knowledge, imposes 'placeless power' on 'backward' and 'resisting' 'local' populations.

Sivaramakrishnan and Agrawal (2003) take issue with the 'global/local' 'dyad' that underlies the 'diffusion' model of modernity, and suggest that it is artificial, insufficient and without logic. Following Featherstone (1990) they argue that given the cultural variability of non-Western nation-states and civilisations, there is and can be no clear definition of 'modernity'. Appadurai (1996:19) argues that the global cultural economy now has to be seen as 'a complex, overlapping, disjunctive order that cannot any longer be understood in terms of existing centre-periphery models'. Writing more recently, Sassen (2007) suggests that globalisation involves two distinct sets of dynamics: one related to the formation of explicitly global institutions and processes; another involving processes that take place 'deep inside' territories and institutional domains, which are often constructed in national terms, and do not necessarily scale to the global level. This concurs with the constructivist approach adopted towards modernity by this thesis. Both processes may be at work in Indonesia's response to the H5N1 virus: the first dynamic in processes associated with the global H5N1 response; the second in more flexible and fluid responses at national and sub-national levels. The empirical

investigations of this thesis focus on the interfaces of these two dynamics, and the related intermediary processes, asking: how does the first set of processes 'land' in Indonesia and interact with the second; and what aspects of the second have material effect on the first?

To sum up, the second section of this chapter has examined the 'Risk Society' thesis, which posits that novel risks occur in what is purported to be a novel period in human history, and that in this period, termed 'high' or 'reflexive' modernity, risk has become the fundamental organising principle of society. As has been argued above, I cannot accept the universalistic nature of such an approach, nor its assumptions that human history has discrete eras and that the concept of 'modernity' has constancy across time and space. If, however, a constructivist position is adopted, which allows 'modernity' to be as plural, fluid, and indeed as potentially contested as risk, the risk society thesis does open up some potentially useful conceptual space. In particular, given that the risk society thesis concurs with cultural and discourse orientated approaches in pointing to relationships between governing institutions or expert systems and governed citizens as being key in constructing risk, the need becomes evident to identify any governing institutions or expert systems, examine their constructions of modernity, and specifically consider knowledge-power dynamics between these institutions, if they are constituted as such, and the citizens putatively governed by them. Risks constructed around H5N1 are of paramount importance for this thesis, but consideration of risks other than those associated with H5N1 will be required to give context, together with consideration of the multiple processes associated with modernisation such as the rise of bureaucracy, capitalism and representative democracy. Further questions that emerge for this thesis therefore include: What constructions of modernity are prevalent in the groups affected by H5N1, and the groups responding to it? Are these related to H5N1 risk constructions, and if so, how?

2.4 Defining modernity

If the first section of this chapter argued that no absolute determination of risk is possible, but that risk is socially constructed, and the second section argued that what may, or may not, be constructed as risk often hinges on expertise, particularly the modernist assemblage of science expressed through a governmental rationality, expert knowledge and what have been referred to as 'expert systems' will require particular scrutiny. In the context of responding to the threat of disease, this may need to go beyond what Beck termed the 'relations of definition' to consider how these actor-networks recast political problems as questions for the supposedly neutral language and approach of science (Dreyfus and Rabinow, 1982). Elite technical

specialists form significant actor-networks in the global response to H5N1, and in the response in Indonesia. In the context of development, Ferguson (1990) points to an 'anti-politics machine' involving experts and technical organisations that are obliged to frame problems in technical terms amenable to technical solutions, and exclude, or deny politics and economics. Li (2007:7) states this plainly: 'Questions that are rendered technical are simultaneously rendered non-political', and draws on Rose (1999:33), who suggests that the process of 'rendering technical' involves a wide set of practices concerned with representing:

> the domain to be governed as an intelligible field with specifiable limits and particular characteristics […], defining boundaries, rendering that within them visible, assembling information about that which is included and devising techniques to mobilise the forces and entities thus revealed.

In the context of international relations, Haas (1992:3) points towards what he calls 'epistemic communities' – 'communities of shared knowledge' – which can display undue and biased influences. More specifically, he suggests that 'network[s] of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area' may collude, even unwittingly, to devise solutions that support a technical, scientific viewpoint, and exclude others, without scrutiny or political oversight (1989:377).

With an investigatory focus therefore set on the H5N1 risk constructions of the globalised technical groups responding to the virus, the work of Bruno Latour (1987; 1993) opens up a third, and final, conceptual dimension concerned with nature, culture and modernity. His analysis of ozone layer damage strikes a chord with investigations of this thesis:

> A single thread links the most esoteric sciences and the most sordid politics, the most distant sky and some factory in the Lyon suburbs, dangers on a global scale and the impending local elections or the next board meeting. The horizons, the stakes, the time frames, the actors – none of these is commensurable, yet there they are, caught up in the same story (Latour, 1993:1).

With the geographical reference changed, this vivid description coincides powerfully with those that can be applied to the H5N1 virus in action, which share many characteristics with the 'imbroglios of science, politics, economics, law, religion, technology, fiction' that concern Latour (ibid:1). Latour's overarching thesis is concise: that the crisis of our time, an increasing incapacity to deal with our own achievements, results from a false dichotomy between nature and culture that emerged with the European Enlightenment and has persisted since in the guise of 'modernity'. This approach, which is partly philosophical, and partly political and practical, provides this thesis with first an opportunity of explaining the plurality and flexibility risk demonstrates epistemologically; and secondly, and more specifically, of explaining the plurality and flexibility that the risks constructed around the H5N1 virus demonstrate in the

real world. It also provide a conceptual approach that usefully crosses the matters of epistemology and ontology that are central in understanding the complexities associated with the multiple risks constructed around H5N1 and the related knowledge and power dynamics.

Latour equates nature with exact knowledge and science, and culture with the exercise of power and politics. He posits a 'Modern Constitution' that invents a separation between the natural world and the social world, and between 'scientific power charged with representing things and political power charged with representing subjects' (1993:29). This false dichotomy both denies and creates 'quasi-objects', hybrids of nature and culture, which can display characteristics of both structure and agency. A group referred to as the 'moderns' drive processes of 'purification', which insist on this separation, and a subsequent 'clean construction of nature, and science, sealed off from society and the self' with entirely separate zones for nature (non-humans) and culture (humans). By way of contrast, the 'imbroglios' Latour examines are held together by 'networks', created by a set of practices called 'translation', which form quasi-objects that are hybrids of nature and culture that are not reducible to one or the other pole. Latour refers to these 'impure entities' as 'actor-networks' and suggests that even if they are not human, they are lively and sociable, and as they are made by relations, they may be attributed with social agency as well as structure. Actor-networks, Latour suggests, are '*simultaneously real, like nature, narrated like discourse, and collective, like society,'* (ibid:6, original italics). This helps explains the epistemological plurality of risk discussed at the beginning of this chapter, where it was shown that different framings construct risk variously as first real and empirically quantifiable, secondly as a product of discourse and power, and thirdly as a collective effect of society. This suggests that risk, including that associated with the H5N1 virus, would bear of useful analysis as an actor-network, as a hybrid of nature and culture.

It also brings into focus Latour's 'moderns', who he suggests, both purify and create hybrids through translation, but refuse to acknowledge that they are doing so, or that there is any overlap between nature and society, or between exact knowledge and the exercise of power. The more the possibility of understanding science and politics together is forbidden, the more 'quasi-objects', reducible to neither nature or culture, are produced. Thus the moderns both proliferate hybrid forms and deny them, forcing them into hidden zones from which they may unexpectedly emerge. This proliferation of hybrids 'unmasks' modernity according to Latour, who suggests that everything occurs in a 'middle kingdom' that exists between society and nature, a zone that modernity cannot acknowledge without collapsing back into 'premodern' indifferentiation. In Latour's terms, the solution is to cease being

modern, and to cease insisting on a separation between the processes of purification and proliferation, whereupon a 'democracy of things' emerges which supersedes the 'clandestine proliferation of hybrids by their regulated and commonly-agreed-upon production' (1993:142). Accepting the existence of hybrids or quasi-objects is the first step to talking about them in what Latour calls the 'Parliament of Things' where:

> … the continuity of the collective is reconfigured. There are no more naked truths, but there are no more naked citizens, either. The mediators have the whole space to themselves. The Enlightenment has a dwelling place at last. Natures are present, but with their representatives, scientists who speak in their name. Societies are present, but with the objects that have been serving as their ballast from time immemorial' (1993:144).

Like Latour, Hinchliffe (2007) finds imbroglios in matters such as genetically modified organisms, viruses and the MMR (measles, mumps, and rubella) vaccine, as well as the disease BSE and the prion particles that are causally related to it. In these circumstances, the links between society and nature, and culture and things, he suggests, become manifest and multiple rather singular matters. Everything is heterogeneous, made with others, and therefore cannot be defined by an essence and is consequently impure. Disease is enacted in many places and in many ways, and an infective particle such as a virus becomes less relevant in defining or understanding it than the relations between the various matters that make a disease. Stressing the political imperative of abolishing an 'incontestable, transcendent nature' in environments where science is being used to by-pass politics, and sceptical of a narrow form of scientific rationality that sees nature and society as essentially separate matters, Hinchliffe suggests that the space-time of things is not well served by the 'one stop shop' of nature, which is a 'rather weak myth by which to govern affairs' (ibid:188).

The third section of this chapter has therefore considered the argument that modernity involves a mistaken insistence: that nature is separate from society, that science is separate from politics, and that knowledge is separate from power, and that these false bifurcations both deny and create 'quasi-objects', hybrids of nature and culture, which can display characteristics of both structure and agency. In the context of understanding and managing disease, it may be the case that technical and scientific experts are overly reliant on a purified concept of a separate, singular and independent nature, which avoids the complexity of nature-culture 'crossings'. Whist this can be politically expedient, if the links between society and nature and culture and things are manifest and multiple rather singular, reliance on a conception of nature as separate and independent does little to create the conditions that allow for disease control, and may in fact impede the formation of such conditions. From this analysis, a final set of conceptually informed questions emerges for this

thesis. These include: Are any groups suggesting that the H5N1 virus should be addressed as a purified matter of nature, and denying the relevance of politics and power? Are any hybrid constructions of risk evident, or denied, and are these related to particular groups?

2.5 Conclusion

This chapter has sought to extract a cogent and conceptually informed set of questions from the extensive literature generated by practical and conceptual investigations into risk and modernity. The objective has been to guide and inform the empirical investigations of this thesis into responses to the H5N1 virus in action in Indonesia. Given the range and extent of this literature – much of which is relevant – I have chosen to draw selectively from it, and this thesis does not attempt to address every dimension raised by it.

In conclusion, my conceptual approach can be outlined as follows. First, a constructivist position is adopted. This suggests that as knowledge is not fixed, but is constructed by social groups, risk is constructed and experienced in different ways by different groups, and different knowledge holders have different understandings of risk. Risk is therefore not an absolute, but a multidimensional and fluid assemblage produced by historical events and social forces. Second, a Foucauldian approach, concerned with discourse and power relations, suggests that risk may be constructed as a means to legitimise power, and can be deployed to suit particular interests. Considering governing institutions in particular, and their relationships with those governed, a line of enquiry develops focused on dissonances or contestations that exist between different risk constructions, and their involvement with the dynamics of knowledge and power. Third, the 'Risk Society' thesis, whilst not adopted in full, but combined with a perspective that accepts multiple modernities in the context of dynamic, ongoing multi-directional globalisation processes, leads to an investigation of different constructions and experiences of modernity prevalent in the groups affected by H5N1, and those responding to it, and an examination of relations these have with H5N1 risk constructions. Finally, from the shifting assemblage that is modernity, a focus is drawn on the processes associated with the dynamics of knowledge and power involved in the constructions of science and their claims to authority, and reflexive responses to them. In this context, Latour's thesis that modernity involves a mistaken insistence that nature is separate from society, that science is separate from politics, and that exact knowledge is separate from the exercise of power, and that this false dichotomy creates 'quasi-objects', hybrid crossings of nature and society, which science denies, is deployed in order to investigate whether a

conception of nature as separate and independent, and amenable to purified scientific investigation, helps or hinders attempts to control the H5N1 virus.

Considering the people living in Indonesia who are affected by the H5N1 virus, and international and national organisations responding to it, the empirical questions for investigation by this thesis, as determined in the three main sections of this chapter, can be summarised as:

- What groups are involved with the H5N1 virus and what risks do they construct around it?
- Do different groups construct risk differently, or are risk constructions similar?
- Are any dissonances or contestations over different risk constructions evident, or are any constructions dominant or excluded?
- What types of knowledge-power relations are involved in claims to authority in constructing risk?
- What constructions of modernity are prevalent in the groups affected by H5N1, and the groups responding to it?
- Are these related to H5N1 risk constructions, and if so, how?
- Are any groups suggesting that the H5N1 virus should be addressed as a purified matter of nature, and denying the relevance of politics and power?
- Are any hybrid constructions of risk evident, or denied, and are these related to particular groups?

Concerned with the need to orientate policy practically, this thesis therefore combines a constructivist perspective on risk, with a regional modernities perspective on modernisation. This combination is drawn together to argue that the response to the H5N1 virus, as manifested Indonesia, has been challenged by the orientation of policy and institutional arrangements towards an epistemological position that attempts to create knowledge by objectively measuring nature, and denies the possibility of hybrid crossings of nature and society. The thesis argues that responses to the H5N1 virus in Indonesia need to accept and incorporate understandings which take into account the multifarious hybrid risks constructed around the virus, which mix purified scientific constructions with the dynamics of culture, politics, and power.

The next chapter outlines the methodology used to address these questions, and indicates how the conceptual approach outlined here was deployed in my empirical investigations in Indonesia.

3. Methodology

> 'It [research] does not follow a neat pattern but is a messy interaction between the research problem, the design of the research and data collection and analysis.'
>
> (Brewer, 2000:102-3)

The previous chapter has identified a set of conceptually informed questions which form the basis of the empirical investigations of this thesis. This chapter describes the qualitative, ethnographic methodology I adopted to address them, and considers the practical and conceptual challenges associated with such an approach. The research was designed with two main phases. The first investigates constructions of modernity and H5N1 risk among international organisations responding to the virus; the second investigates constructions of modernity and H5N1 risk among national and sub-national organisations in Indonesia, and among those living or working with poultry whose lives are affected by the virus, and the response to it.

3.1 Where am I coming from?

As someone who had worked worldwide as a journalist and media producer for over 20 years, the early stages at least of an investigation into the constructions of risk associated with a novel virus amongst different individuals and groups, which were hypothesised as being various and possibly incongruent, did not strike me as being particularly challenging. I anticipated that the data to be collected involved what was being said (or written), by who, together with details of when and where; and the process of analysis, which is inevitably more complex, would focus on why. The investigation would involve a variety of activities including desk work identifying and reviewing existing literature, data and documents, and sketching out possible paths forwards. The identities or positions of major actors and qualified commentators would also required, together with their contact details, a statement of intent which would address any ethical issues, and a formal or informal list of questions, or subjects for discussion. The locations of the sites of any relevant activities also needed clarification, and possibly dates associated with events at them. Away from the desk, there was then work to be done meeting and talking formally with some actors or commentators, less formally with others, and recording their contributions. Sites of any relevant activities – e.g. farms, conference halls, markets – would need visiting at the right time, possibly with photography, and definitely with notes or recordings made of my impressions. With such a large project, running over so long a period, notes, data and metadata would be key. With this

preconception of the task, it was reassuring to find that the academic literature had a name for such a broad brush approach:

> Qualitative research involves the studied use and collection of a variety of empirical materials – case study, personal experience, introspective, life story, interview, observational, historical, interactional, and visual texts – that describe routine and problematic moments in individuals' lives (Denzin and Lincoln, 1988:3).

Similarly, the notion of the researcher as a *bricoleur* producing a *bricolage*, 'a pieced-together, close-knit set of practices that provide solutions to a problem in a concrete situation' (ibid) also seemed familiar.

The challenges I anticipated, based on my previous professional experience, initially focused on those associated with access. Were any relevant documents concealed or secret? Were the relevant actors visible and would they meet and talk? Were any relevant sites off-limits or inaccessible? In this context, I also had concerns about power, particularly the power to convene. If those in the international organisations coordinating the H5N1 response did not want to talk to me, I had no way of coercing them, and the data for one main strand of my investigation would comprise little more than a set of policy documents and press releases. Conversely, whilst I might more easily impose myself on Indonesian hospitality by way of my visitor status, this might be ethically inappropriate, and might colour understandings of my motivations, objectives and intentions. I knew too that reciprocal obligations or other entanglements might colour my understanding of the motivations, objectives and intentions of those I was observing or attempting to interact with. After all, in England, where I was born, and where I have spent most of my life, comprehending the concerns and motivations of my next-door-neighbours is often a challenge. How was I to even glimpse the concerns and motivations of a Javanese poultry farmer, let alone produce a rigorous analysis of my understanding of his or her constructions of the risk associated with a sub-microscopic particle? I knew too that for all sorts of reasons I might be subject to simple deceit,[37] that my presence might influence events, and that as a male researcher, access to the talk of women, who often rule the roost (literally, in that they often are in charge of the family poultry, and figuratively, in that they often are in charge of the household budget), would very likely be difficult. I had lived in Indonesian from 1981 to 1983, visited ten or so times between 1984 and 1997, and had developed great respect for the precise etiquette and norms of behaviour of Java in particular. I had also had the experience in 1982 of creating panic as I approached a

[37] General (President) Suharto notes that 'there are five categories of lies which are not punishable... First those you tell in a social gathering; second, those you tell your bride on your wedding day; third, those you tell to protect your wealth; fourth those necessary to protect your life; and fifth, those you need to protect your family.' (*Butir-Butir Budaya Jawa*, Jakarta: Yayasan Purna Bhakti Pertiwi, 1990:95)

small village on one of the more remote eastern islands on foot, and having to turn back under a hail of stones: the only white men familiar in that zone then were the violent, gun-toting heroes and villains of gory Hollywood action movies.

These challenges – and others – are, of course, discussed in a large body of literature associated with ethnographic research, which Denzin (1997:xi) defines as '… that form of inquiry and writing that produces descriptions and accounts about the ways of life of the writer and those written about'. Often characterised as 'crises', Denzin suggests that the methodological difficulties of ethnography fall into three main categories. These added to and nuanced my professionally derived concerns. The first questions the validity any research has to represent the situation under investigation, given the inevitability that any world captured in any study will be a construction of the author, that the research process will constitute only that which it is investigating, and that the researcher is irredeemably entwined with subject of study. The second indicates the impossibility of validating any research by checking it against any reality which it purports to represent. If there is no world separate from meaning, objectivity is impossible. Denzin puts it thus: 'Humans are always already tangled up… in a second-hand world of meanings and have no direct access to reality' (1997:246). The third points to the issues associated with *praxis*: the application of research findings. As discussed below, it would be the last which caused the most significant challenges to my research.

In the face of these conceptual complexities, it seemed difficult to go forwards with the required academic rigour, although many of my colleagues seemed busily and usefully engaged in ethnography. Hammersley (1998:66) offered one sort of solution, arguing that our perceptions and understandings of the world might be mediated, but that it is still possible to operate with less than certain knowledge: 'knowledge claims can be judged in terms of their likely truth'. Judging 'likelihood' then seems the issue, and here the concept of triangulation – 'crosschecking and progressive learning and approximation through plural investigation' (Chambers, 1994:1254) appeared powerful, attractive, and not unfamiliar. Flick (1995:5) too offers some guidance, pragmatically suggesting that the central criteria in qualitative research are whether findings are grounded in empirical material, and whether the methods have been appropriately selected and applied to the object under study. Here I felt confident that my flexible, iterative approach involving interviews, some structured, some less so, and observation, was appropriate; and the creation of texts (as close as possible to verbatim for the interviews, and created at the time, or shortly after, for observational material) would provide the necessary empirical grounding. I had noted too Marcus's (1998:98) notion that a solution of sorts exists in accepting the role of an 'ethnographer-activist', compared with a

'detached anthropological scholar', along with Denzin's suggestion that the researcher must be involved personally: 'no longer an objective observer of the world' but one that 'stirs up the world and is changed as a result of that project' (1997:165). I had initially read this naively in the context of personal pro-poor leanings, and some suspicions regarding the operations of transnational corporate capitalism. However, as I explain below, unwittingly I found myself more engaged than I had anticipated, and the root of it was Denzin's notion of *praxis*, which I had initially disregarded.

The methodology for this research therefore is ethnographic, accepting that ethnography should be both actively situated between systems of meaning (Clifford and Marcus, 1986) and a humanistic discipline offering 'thick descriptions' – an exploration of the meanings embedded in the language and actions of social actors (Geertz, 1973). Following Fischer (2003), a discourse approach is adopted, emphasising the narratives and storylines that emerge from the empirical interview-based data. Words and language are accepted as a form of action and are thus crucial data for analysis. The research has been influenced by what has been called a 'new sort of anthropology' which situates the production of knowledge about other people, and places it explicitly within the framework of international relations (Mosse, 2005). Analysing the political and historical relations of power, and the systems of values which shape representations, the project is interdisciplinary and multi-positioned, with the 'field' conceptualised as a socio-political rather than geographical space (Gupta and Ferguson, 1997). Inevitably, given the scope of the investigation which tracks the virus across different geographic and social settings, it is multi-sited, moving away from the local situations of conventional ethnography to examine the circulation of cultural meanings, objects and identities in diffuse space-time (Marcus, 1995). This approach, focusing on actors and their discourses and practices, is well-suited to an investigation concerned with the interactions, overlaps, confusions and contestations involved with techno-scientific and social domains (Callon, 1986; Callon, 1991; Law, 1986). How problems are formulated, how actors (not only people, but also organisations and objects) become 'enrolled', and how sets of interests relating to policy goals and practical concerns are 'translated' are central concerns. The success of policy ideas is assumed not to be inherent in their design, but to arise from their ability to continue recruiting support and so impose a growing coherence on those who argue about them or oppose them (Latour, 1996).

3.2 In the air

The research was designed with two main phases followed by a period of writing up. Given the lines of investigation drawn from the conceptual background discussed in the previous chapter, the objective of the first phase was to investigate the constructions of risk and modernity associated with the H5N1 virus amongst the international institutions responding to it, and the second phase was designed to investigate the constructions of risk and modernity associated with the virus amongst civil society in Indonesia, particularly those whose livelihoods are dependent on, or involved with, rearing poultry. The second phase also involved identifying and examining risk constructions among the national and sub-national organisations associated with the response in Indonesia. In both phases, sampling of interviewees was purposive: I wanted to identify and engage with both officials involved in the design and implementation of policy, and with as wide a range as possible of people involved with poultry keeping. I was also prepared to use 'snowball' sampling in that I anticipated informants in both phases might well have valuable suggestions as to who else I might meet with. In both phases, I was concerned to follow an approach allied to 'grounded theory' (Glaser and Strauss, 1967; Strauss, 1987) in order to allow my investigations to follow the concerns of the informants as well as my own, and open up as many perspectives as possible to examination.

The first phase initially involved a period of desk work locating and analysing a range of news reports, conference reports, online resources, and planning and policy documents, with a view to identifying key organisations and individuals involved in the H5N1 response to approach for interview. As determined in chapter 2, I was interested in finding out what sort of risks these actor-networks constructed around H5N1, whether there were any internal dissonances or contestations regarding them, what sort of knowledge and power dynamics were involved, and how these groups constructed modernity. In particular, I wanted to investigate whether these groups were concerned with the virus as a purified matter of nature, or whether they were addressing it as a hybrid matter, involving issues associated with culture, politics and power. Many of the planning and policy documents, along with conference reports and other material, which included academic papers, were available online, and the key actors and networks quickly became apparent by way of their names appearing regularly on, or in, documents such as lists of conference attendees. The official or semi-official spokespeople for the various key organisations also quickly became apparent, and I realised that for well-rehearsed 'official' responses at least, as well as because they would be in a good position to steer me towards further informants, these individuals should feature early in my

interview schedules. Although most interviewees were provided with a short outline of the study objectives in advance, and I had a list of questions and prompts prepared, I was happy for the interviews to be significantly led by the interviewees, and range across their interests more than mine. The question, for example, 'how do you construct H5N1 risk?' would not, I think, have advanced any conversations greatly, let alone the question, 'how do you construct modernity?' Instead, I often opened by asking when the respondent had first heard of H5N1, and what had subsequently occurred in their professional life related to it. A closely transcribed but loosely structured interview technique, involving mainly 'why?' and 'how?' prompts, allowed me to create a set of texts I felt were representative of the respondents' professional worlds and concerns, which I could subsequently triangulate and analyse.

In the subsequent setting up and accomplishment of the interviews, I was fortunate to be engaged in the research and co-authoring of a paper for the UN FAO Pro-Poor Livestock Policy Initiative (PPLPI) under the DFID funded Pro-Poor HPAI Risk Reduction Project (i.e. Scoones and Forster, 2008). This allowed me access that I later realised would have been difficult to arrange had I purely been working on a DPhil thesis. Subsequently, 35 semi-structured interviews and discussions were conducted between 30 January 2008 and 14 July 2008 in Europe and the USA with over 53 officials from the European Commission, the World Bank, US State and Agriculture departments, the FAO, WHO, UNSIC, UNICEF and UNOCHA (Office for the Coordination of Humanitarian Affairs) in the United Nations system, as well as the OIE, and other related development and emergency response agencies. Within the field, I was concerned to capture as wide a range of opinion as possible. Verbatim notes were taken at some interviews, and audio recordings were made at others. All interviewees were guaranteed that their contributions would be non-attributable, and the results were typed up or transcribed shortly after each interview to form a 76,000 word document. In the analysis of this text I was fortunate to be guided by my co-author (and DPhil supervisor), Ian Scoones, who advocated a focus on identifying and elucidating the links between the actors, the networks and the narratives, or persistent storylines, involved (c.f. Keeley and Scoones, 2003). This approach was to prove influential in these and my future research activities. In particular the guarantee of non-attribution to interviewees appeared vital. Initially sceptical about accessing any significant information from interviews or conversations within large scale organisations, I was astounded by the technical, political, and emotional frankness displayed in many interviews. The researcher as therapist came to mind on one occasion. In chapter 4 a modified actor-network diagram is presented that resulted from this work, which argued that within an overarching 'outbreak' narrative (Wald, 2008) three main narratives were competing

for attention in policy processes. One was a narrative linking veterinary concerns with agricultural and livelihood issues; a second concerned human health, and a third pandemic preparedness. This contributed significantly to my understanding of the issues at the international level, and drew me further into the more conceptually orientated concerns of this thesis.

Work in Indonesia also initially benefited from a second briefer engagement with the FAO Pro-Poor Livestock Policy Initiative, which allowed for a period of reconnaissance in Indonesia, and reflection on the situation there, before my own more focused investigations began. This involved researching and writing a paper on the political economy of avian influenza in Indonesia, which was part of a wider comparative study examining the responses to avian influenza in Cambodia, Thailand and Viet Nam (i.e. Forster, 2009). A similar methodology of non-attributable, semi-structured interviews and discussions was applied between 10 and 29 August 2008, which led to a total of 44 recorded encounters with officials from national and international organisations working on H5N1 in Indonesia. These included FAO, WHO, UNICEF, UNOCHA in the UN system, and AusAID, DAI, USAID and USDA (US Department of Agriculture) outside it. National organisations engaged with included the Indonesian Ministry of Agriculture, the National Committee for Avian Influenza Control and Pandemic Influenza Preparedness (KOMNAS FBPI), and the Indonesian Center for Agriculture Socio-economic and Policy Studies (ICASEPS). Interviews were also recorded with a diplomat, and three journalists, and two days attending a veterinary conference in Bogor, West Java, led to a dozen more fleeting but informative conversations and suggestions for follow up contacts.[38] In this period I also made my first visit to Majalengka, a provincial town with a population of around 100,000 people in West Java, where I had a friend, and which provided the opportunity for encounters with people who were raising or living with poultry on a range of scales. At this time a searchable corpus of approximately 185,000 words was also created of 367 H5N1-related articles drawn from *The Jakarta Post* covering the period 14 January 2004 to 27 August 2008.[39]

This work was invaluable in gaining access to key officials and sites, but ultimately proved to offer some drawbacks, including the introduction of an unexpected element into my research position. My political economy paper had suggested that Indonesia, particularly

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[38] The 10th National Veterinary Conference of the Indonesian Medical Association, Bogor, 20 - 21 August 2008

[39] One of seven national newspapers, The Jakarta Post is published in English, but represents the content of the more serious Indonesian language newspapers, and along with Kompas, is considered one of Indonesia's newspapers of record.

western Java and the area around the capital, offered a prime example of a densely populated, rapidly growing 'hot zone' prone to trans-species virus transfers (c.f. Bloom et al., 2007; Jones et al., 2008), and argued that technical responses to the virus were hampered by political and bureaucratic processes. *Praxis*, as mentioned above, involved not just writing this paper, but also promoting it and getting it read. My colleagues in the communications team at the STEPS centre at IDS (Institute of Development Studies) had taken the lead on this, but I too created distribution lists, ensuring that the respondents to the study at least had the chance to read it and respond. I also handed the paper out to many I engaged with, and spoke about it, or on it, at four international conferences in 2008 and 2009, events which also became important sites for my continuing investigations into internationally orientated risk constructions.[40] The research for this thesis therefore has to be set against a position I had developed amongst many of the actors and networks involved with the international and national response, which advocated the use of social science to investigate issues of power and politics involved in the emergence, spread and persistence of zoonotic diseases. Many involved welcomed this approach, but for a small number, an incursion into technical, commercial and political domains by an independent 'ethnographer-activist' was not ideal. At the best of times, researching issues associated with infection and disease (not to say death) is difficult, and in Indonesia a US$6.5 billion annual turnover industry, with a history of collusion and opaque political processes, was significantly involved. Development projects too often have complexities, which ethnographer-activists are not always welcome to witness, and the H5N1 response in Indonesia, which had originally been constituted as an emergency, with significant funding, had had difficult periods. My access was sometimes therefore limited, and I know that at times I was subject to dissimulation.

3.3 On the ground

In mid-November 2008 I set up a base in Indonesia's capital, Jakarta, with the intention of conducting the fieldwork for this thesis over the following year. In this period my aim was to address the core questions of the thesis concerning the risks constructed around H5N1 in national and local settings, any contestations or dissonances relating to them and the

[40] 24 - 26 October 2008 - Sixth International Ministerial Conference on Avian and Pandemic Influenza, Sharm el Sheikh, Egypt
16 - 17 February 2009 - Wellcome Trust Frontiers Meeting: Emerging Infectious Diseases – Next Steps, Ho Chi Minh City, Viet Nam
26 - 27 February 2009 - One World, One Health: From Principles to Action. Expert meeting co-hosted by IDS STEPS Centre and Chatham House, London
28 June - 3 July 2009 - 10th Biennial Conference of the Society for Tropical Veterinary Medicine, Lübeck, Germany

associated power dynamics, and the constructions of modernity evident amongst different social groups and actor-networks. Again, I was seeking to discover whether any groups were constructing the virus, and the risk associated with it, as a purified matter of nature, or whether hybrid concerns, involving matters of culture, politics and power were at play. Consequently I maintained contact with the international and national officials I had met on the PPLPI project (as mentioned above, some were more enthusiastic than others), developed new contacts, particularly in the academic community and amongst Indonesian officials, and explored the markets, supermarkets, slaughterhouses, transport systems, malls and back streets of the capital and its periphery, and ranged more widely in the countryside. Aside from an ethnographically informed journalistic notion of following the story, which involved maintaining a running checklist of objectives, meeting on an anywhere anytime basis, and filling an increasing number of diaries and note books, this phase of the research ultimately came to involve four main elements, each slanted slightly differently with regards to my requirements, position and role, and each of which created discrete sets of texts.

The events, methodologies and challenges associated with each of these four elements are described below, but in summary, alongside a further 31 semi-structured interviews with national and international officials involved with the international response, and 37 interviews with national and sub-national government officials and industry representatives, this second phase of fieldwork involved less structured and more ethnographic interactions with people working in markets, slaughterhouses, collecting yards, and on farms, as well as with consumers and those living with chickens in rural areas (who had a range of commercial involvements with poultry). In the latter category, I recorded 45 interactions with domestic poultry keepers, 18 with more commercially orientated farmers, 28 with people involved in marketing processes, and 20 with consumers. An anonymised list of interviewees and respondents this thesis draws on is presented in appendix 11.1. Given Indonesia's geographical size, it quickly became apparent that I would have to focus my activities, and this led to repeated visits to Majalengka in West Java, as described below, with visits to other sites in Central and East Java, Sumatra, Sulawesi and Bali, often following through on a specific invitation or objective. Despite my best intentions however, the research is biased towards the concerns and perspectives of Java, particularly West Java. As this is where Indonesia's poultry is densest, however, and where H5N1 appears to be most prevalent, I feel this is a bias in a justifiable direction.

I also quickly discovered that 'bird flu' was rarely a popular topic for conversation, especially in the market chains and on the farms, and found two ways to address this. One was

to visit a particular site – a market trader, a farm, or a householder – repeatedly. Those that welcomed my attention quickly became evident, and as the number of visits increased, so did the richness of the data, I felt. The other was to visit with an Indonesian intermediary, who could explain my presence, help in translation (Sundanese is the prevalent language in West Java for example, not Indonesian), and give his or her interpretation of the situation to me afterwards to compare with my own. This sort of intermediated, hybrid, analysis became invaluable, I found, as did wide ranging conversations on the subject of risk and modernity in Indonesia with the people who were, or who became, my friends. Eventually, this mix of observation, open and semi-structured interviews, and discussion/conversation provided me with a set of perceptions, constructions and framings of H5N1 risk, and attitudes to authority and the H5N1 response, which I felt triangulated well. Modernity, as an idea and as a practice, is a more complex matter (and one where it is more difficult to escape one's own preconceptions), and whilst I feel I have a well-triangulated understanding of some of its important dynamics and dimensions amongst many of the groups I have engaged with, I remain prepared to be surprised. In Sumatra, for example, I met a woman who proudly told me her little boy was called Adolf Hitler. They had wanted to name him after a famous European, but had no inkling of the connotations of the name.[41]

In fact, with interruptions, nearly two years passed until mid-September 2010, when I felt I could draw a line under the research. My main concerns associated with the need to extend the period of fieldwork revolved around first the need to conduct enough interviews to feel that I could triangulate robustly, and second that I had involved as many perspectives as possible. There are very many of them in Indonesia. In particular it had proved difficult to arrange and conduct any significant number of interviews with the large industrial scale operators producing the bulk of the country's poultry meat, and I am still concerned that my personal bias against the operating procedures of these groups has led to a limited analysis of their position.

Friends in Majalengka

Jakarta, particularly since a January 2007 regulation[42] (discussed in chapter 7), has few poultry farms, and few people now keep chickens in the urban area, commercially, or as a hobby. Having made excursions to the smaller, provincial towns of Bogor in West Java, and Yogyakarta in Central Java, as well as more widely to Bali, Sulawesi and Sumatra, I subsequently decided to

[41] Padang, 9 February 2009
[42] DKI Jakarta's Local Government Regulation No. 4 of 2007 on Poultry Raising and Movement Control

set up a second base in Majalengka, capital of Majalengka Regency, some 40km south-west of Cirebon in West Java, and 180km east of Jakarta. As mentioned above, I had first visited the town in August 2008. From a very wide range of possible sites in Indonesia, I had decided that a focus on West Java was appropriate as it supported the densest populations of both people and poultry, and was central to the commercial production of meat for nearby conurbations. Garut, say, site of well publicised and persistent H5N1 infection, further south and west, might have suited my objectives better, or Sukabumi, closer to Jakarta, and better linked to its poultry market chains, particularly with respect to my research associated with chapter 7.[43] Majalengka, however, offered a mixed agricultural economy, including a number of broiler farms supplying Cirebon, a busy commercial area and market, its own government, and very many people keeping poultry, particularly towards the periphery of the town and in the nearby countryside. I was therefore able to visit six sites repeatedly, including three poultry farms of different scales, and three households keeping poultry. I also had a sympathetic friend living there, who would accommodate me and provide guidance. Importantly he would introduce me to two informant/assistants, both long-standing residents of the town, who engaged enthusiastically with my research, contributing to it themselves, conducting interviews both with me and independently, discussing tactics and results, and arranging visits to informants and poultry farms. Their support was invaluable. Majalengka has few Caucasian visitors and my presence, especially when I expressed an interest in poultry and poultry illness, was usually interpreted as a veterinary or commercial 'spy'. As discussed in the following chapter, few people are prepared to acknowledge avian influenza because of the fear of culling, and the arrival of government officials that conduct the process. In all, 25 interviews were recorded from Majalengka as a result of seven visits between October 2008 and July 2010, which were encapsulated into a 24,000 word document in August 2010.

My experiences in Majalengka, and to a lesser degree in Jakarta and Yogyakarta, as well as conversations with other researchers working on other health-related topics, convinced me that as an 'outsider' I would have considerable difficulty penetrating the friendly and polite performances of those who owned poultry, particularly those who had experienced the sudden mass mortality associated with H5N1 infection. In particular as a man, I rarely had the opportunity to talk at length with any women in the countryside, and many are involved in day-to-day poultry-keeping. It was also the case that as I spoke the national language *Bahasa Indonesia*, but none of the local languages (e.g. Sundanese, or Javanese), I would be associated

[43] Garut is actually named in an Influenza A/H5N1 isolate: 'EU124153.1 A/chicken/West Java/Garut May 2006' and was the site of a cluster of human cases in July and August 2006.

with officialdom, and terms in local languages would be remote or inaccessible. Consequently I recruited three Indonesian assistants for a second line of research. All had Master's degrees from Indonesian universities and experience in anthropological research into agricultural or health topics. We carefully worked up a brief together, which was structured as a loose questionnaire, and tested it in the field. The assistants then visited areas where they were well known, or had family, and could more easily operate as 'insiders' speaking the local language. Subsequently, in October and November 2009, one assistant produced five interviews with women from Bekasi, on the outskirts of Jakarta; another produced five interviews with men living near Medan in North Sumatra, and the third produced four interviews with men and two with women living near Surabaya in East Java. The project was not explicitly designed to investigate differences between regions, but the geographical diversity was welcome, and the results were triangulated with my longer term and more detailed investigations in Majalengka. All researchers operated with audio recorders, and translations of the 16 in-depth reports, which totalled approximately 20,000 words, were discussed in detail with the research assistants before being finalised.

Working for UNICEF

The third element of fieldwork was designed explicitly to investigate the communications initiatives associated with the response to H5N1, and related constructions of risk and modernity. This involved working for 40 days in early 2009 on a 'Good Practice' study for UNICEF Indonesia, which focused on UNICEF's avian influenza and pandemic preparedness programme. These activities, which ran from mid-2006 to mid-2010, form the basis for the investigations discussed in chapter 9. They included projects focusing on professional groups (e.g. journalists and religious leaders), schools, and communities. Broadly, the assignment was an exercise in 'knowledge management', setting the activities of the multi-stranded avian influenza programme in Indonesia against UNICEF's 'Good Practice' criteria. The work comprised interviews, group discussions, and document analysis, and provided good opportunities for access, introductions, and more informal conversations over a number of geographically dispersed sites.[44] This provided further material for me to triangulate against

[44] Sites related to the main strands of the investigation include: 1. Advocacy: UNICEF Office, Jakarta, 13 April 2009; KOMNAS FBPI, Jakarta, 3 May 2009; UNICEF Office, Ambon, 16 April 2009; discussions in Lombok, 27–29 January; Batam, 21–23 April; Bali, 18–20 May 2009.
2. Community awareness and empowerment: Sub-puskesmas, Desa Sidosari and Desa Muara Putih, Lampung, 4 February 2009; Community meeting and video conference, Pesisir Tengah, Krui, Lampung Barat, 5 February 2009; Village Volunteer for Animal Health Facilitator training, Lintau and Koto Kilalang,

my investigations in West Java. During this period, I kept one side of my notebook for UNICEF notes, the other for notes associated with this thesis. The former were written up into a 20,000 word report at the conclusion of the assignment, and the latter were typed up shortly after they were taken to form a document of approximately 22,000 words.

It is impossible to summarise the experience of the assignment in the space available here, but it should be noted that the pandemic planning workshops became particularly interesting as H1N1 influenza spread from Mexico from March 2009 onwards; also that the assignment provided valuable introductions to regional government activities in West Sumatra and South Sulawesi that I would return to later. The drawback, of course, was that during this time I was a participant, an official engaged in what appeared to be evaluation exercise, and I was therefore very often presented with performances designed to show the programme in a favourable light. There were, however, many valuable moments. In 15 classrooms, for example, with about 40 children in each, I was able to ask first for hands to be raised to acknowledge 'sudden chicken death at home', and then for hands to go up to acknowledge 'sudden chicken death among neighbours'. The former produced around 12 (hesitant) acknowledgements in total; the latter several hundred. Poultry mortality is doubtlessly common, but acknowledging it is not, at least in the context of a researcher-visitor interested in avian influenza. On another occasion, at a community meeting in East Java, around 20 small scale poultry farmers presented a forceful and well-rehearsed argument, for me to take back to the authorities in Jakarta, that they required only that H5N1 vaccine be made available which they could administer to their poultry themselves, rather than having to call in the local animal health services.[45] On Bali, I much enjoyed a dramatic performance at a school focusing on reporting poultry mortality, and burying and burning carcasses, which used a real chicken specially anaesthetised for the event.[46]

West Sumatra, 9 February 2009; UNICEF Office, Serang, Banten, 19 February 2009; Desa Pinggirsari, East Java, 12 March 2009.
3. Media training: On Track Media, Jakarta, 14 April 2009; UNICEF Office, Ambon, 16 April 2009.
4. Pandemic preparedness workshops: Lombok workshop, 27 – 29 January 2009; Batam workshop, 20 – 23 April 2009; Bali workshop, 17 – 20 May 2009.
5. Religious leader programme: Makassar, South Sulawesi, 17 – 18 April 2009.
6. Schools programme: West Sumatra: Sekolah Dasar Negeri 01, Tarung-Tarung; Sekolah Dasar Negeri 17, AROIV Korong, Kota Solok, 10 February 2009; Banten: Sekolah Dasar Negeri Cipocok Jaya 1, Serang; Sekolah Dasar Banjar Agung IV, Serang, 9 February 2009; East Java: Sekolah Dasar Negari Kepuh 02, Tulungagung; Sekolah Dasar Negari Beji III, Tulungagung, 12 March 2009; Central Java: Sekolah Dasar Negari Taman Pekunden, Kec. Semarang Tengah, 30 April 2009; Bali: Sekolah Dasar Negeri I, Takmung, Klungkung Regency, 20 May 2009.

[45] Desa Pinggirsari, East Java, 12 March 2009

[46] Sekolah Dasar Negeri I, Takmung, Klungkung Regency, Bali, 20 May 2009

International aid

As mentioned above, having completed one year's fieldwork at the end of 2009, I was not convinced that my research had ranged widely enough across the many groups and interests involved with poultry in Indonesia. In particular, I was concerned (and frustrated) that I had had little significant contact with the large industrial groups which produce the bulk of the country's poultry meat. Consequently, alongside my individual investigations, I jumped at the opportunity to engage with the Agence Française de Développement (AFD) research programme, 'Global Public Goods and Local Practices'. This involved collaboration between December 2009 and May 2010 with an AFD employee, Olivier Charnoz, in the production of a paper examining how power relations had affected the policies and practices associated with the response to H5N1 in Indonesia (i.e. Charnoz and Forster, 2011). This constituted a fourth and overlapping element that contributed to the fieldwork for this thesis. Adopting a political economy perspective, and Barnett and Duval's (2005) four dimensions of power, the study focused on three case studies, each one of which had its own dynamics and sets of power relations: (1) the poultry market chain into Jakarta; (2) the replacement of Law No. 6 of 1967 regarding Animal Husbandry and Veterinary Hygiene with Law No. 18 of 2009 regarding Livestock Production and Animal Health; and (3) the biases involved in the international response.

Olivier Charnoz enthusiastically accepted the idea that I might use data from the study in my thesis research. The focus of the first case study – poultry market chains – suited my purposes well, and I anticipated the focus of the third – international biases – would both provide the opportunity to re-interview a relatively small number of officials I had by this stage identified as key, particularly with respect to changes that had occurred in 2009, and once again to attempt to interview certain individuals and institutions that had proved elusive in my attempts to secure appointments on the basis of researching a DPhil thesis. To cover the extensive ground proposed, and in response to my comments regarding the difficulties of occidental researchers escaping either an official or a 'spy' category, we engaged Indonesian researchers (and advisors) on the first and second case studies, whilst Olivier Charnoz and I, with an Indonesian assistant, addressed the third. Subsequently, in collaboration with the researchers, detailed briefs were developed, schedules of interviews agreed, and once the latter were accomplished, the transcripts and initial analyses were discussed and clarified at a workshop. At the end of the process, I had three texts in hand relating to the three case studies. The market chain text covered interviews with 13 individuals, accomplished between 4 and 31 January, and was approximately 18,000 words long; the Law 18 text covered detailed

interviews with four specialists, accomplished between 13 and 17 January, and was approximately 10,000 words long; and the international biases text, where I had attended 12 of 18 interviews between 5 and 14 February, ran to some 21,000 words.

3.4 Data analysis

As mentioned above, I applied a process of discourse analysis to these interview-based texts. This was set against close reading of the limited amount of academic material published at the time on H5N1 in Indonesia (e.g. Padmawati and Nichter, 2008; Sumiarto and Arifin, 2008; Patrick and Jubb, 2008), which went some way towards identifying the main actors, networks and some of the narratives involved, and a content analysis of the corpus of newspaper articles I had created. A range of methods were involved in the latter. Read relatively casually, the text, which comprised mainly news reports with some opinion/editorial pieces, provided rich information on my initial questions relating to the groups involved with H5N1, the various risks that were being constructed around it, and some of the contestations that were emerging. I highlighted these in the text using different colours for different questions (e.g. groups, risks, contestations) by way of a categorisation coding, and maintained a running list of 'outcomes/understandings' in my notebooks. More specifically the newspaper corpus also allowed me to search for particular terms or to check on the repeated occurrence of a particular spokesperson or interest group. A search on '1918', for example, which I took as an indicator of the 1918 - 20 'Spanish flu' pandemic, produced just ten mentions in 367 articles over nearly five years, whilst 'cull' appeared 326 times and 'vacc' (to cover 'vaccine', 'vaccinate' and 'vaccination') 630 times. At the time I drew no specific conclusions from these analyses, and do not offer any now, but in terms of familiarising myself with the issues as reported in the press, and identifying some of the individuals and organisations involved to approach for interview later, and their public positions, it was a valuable exercise. For similar reasons, during the course of the fieldwork, I both returned regularly to the corpus, and paid careful attention to the daily press, maintaining a set of press cuttings and notes derived from them.

The published academic work, however, and the press reports did not go far towards my more conceptually-orientated investigations into the knowledge-power relations involved in responding to H5N1, the relationships between constructions of H5N1 risk and constructions of modernity, and my central questions relating to any purification and hybridity of H5N1 risk constructions. In particular, although representatives of various groups, including industrial-scale operators, farmers of various types, and veterinarians, for example, were often

given voice in the press, often to promote their agendas and concerns, only rarely were, for example, any smallholders, market traders or consumers themselves directly quoted; and it was primarily such groups and their understandings and opinions that interested me.

The texts that resulted from the fieldwork interviews addressed these gaps and provided the most substantial data that I was to draw on in arguing the thesis. I attended the majority of these interviews myself and took close to verbatim notes at all of them, which were typed up, or written up neatly, shortly afterwards. In some cases, the process of analysis began during the interview, or immediately afterwards. It was certainly not the case that I assembled my data (comprising over 200,000 transcribed words in total) and then analysed it. In some interviews, an almost startling sense of illumination occurred such as, for example, when an industry analyst described the severe drop in consumption of chicken in Jakarta brought about by the official announcement of H5N1 infection in January 2004. It is one thing to read a newspaper report of chicken sales halving, and quite another to hear of 'a ring around the city' with market ready poultry 'backing up to the farm gate' from someone who had been there. In my transcripts I highlighted such sections, and others that appeared relevant to the themes of my investigations, first in yellow, as an initial indication of my interest, and then in orange, and then in red, as they increasingly concurred, overlapped and triangulated with what I was learning from other respondents.

A slightly different process occurred in the case of interviews conducted by assistants at which I was not present. As discussed above, the form of these had been carefully planned and rehearsed in advance, and in the first instance I asked for the reports to be delivered to me in Indonesian, so as not to inhibit the assistants' reporting, and to avoid potential pitfalls over the translation of items such as disease names, for example. I first read these through with a dictionary, before either reverting to the author for a translation, or sending them to a third-party translator. This did not however conclude the process. With texts in Indonesian and in English, I then met with the assistants individually and in groups and went over the material line by line with them to check the accuracy of the original reports, and the accuracy of the translation. This also provided a valuable opportunity to discuss the material and to tease out any clarifications, or determine if any further investigations were required. On several occasions the researchers conducted follow up visits, and in Majalengka particularly, I regularly took the opportunity to re-visit the respondent along with the researcher, often with the intention of following up on, or clarifying, just one specific line of investigation, or simply to observe the circumstances of the respondent and have a further interaction with someone who appeared well informed and talkative.

Again, as in the interviews I conducted myself, very often in the course of this process of translation, discussion and clarification, a perspective, an understanding, or even just a word struck me forcefully before any process that formally felt like 'analysis' began. Again these were highlighted in my texts, and often opened up new strands in my investigations, or the conversations that were entwined with them. In the context of this fieldwork I drew a distinction between an interview and a conversation, although sometimes they merged. Generally, an interview occurred as a result of a pre-arranged appointment which was accompanied by a statement of my objectives and an assurance that any data derived from the meeting would be non-attributable. At such events, my notebook would be open, and I would be busily writing in it. Conversations were more informal events that sometimes resulted from appointments, but more often resulted from chance meetings, such as at social gatherings, where I made no declarations as to my position other than conversationally offering the fact that I was a PhD student interested in avian influenza. Data gleaned during such occasions were recorded as a memo after the event in my notebooks, but more often such meetings provided the opportunity for me to seek an 'insider's' analysis, or for me to test a putative analysis of mine on someone closer to the subject matter, or everyday life in Indonesia, than I was. This formed a sort of peer debriefing. In Majalengka, for example, I had a large number of wide ranging discussions with my Sundanese friend who lived there, and the assistants he introduced me to, which were invaluable to my understanding. Similarly, on returning to Jakarta I regularly met socially with a wide range of Indonesians and expatriates. Some were involved with H5N1, others were not, but many provided me with useful perspectives relevant to analysing and understanding my data. Regarding *aratan*, for example, a term I found in use in central and east Java, which appeared to denote a long-standing, highly contagious and deadly poultry disease (which is discussed in chapters 6 and 8), I was surprised – and slightly embarrassed – to discover a team of elderly Javanese linguists had been formed to investigate the etymology of the term, with a view to aiding my analysis.

With such inputs also being recorded in my notebooks, along with my own personal thoughts and reflections, and notes from newly published official reports and academic studies, I felt that I was quite quickly producing the sort of robust, multidimensional *bricolage* mentioned at the beginning of this chapter. In addition to this, and providing further opportunities to triangulate and test for coherence and dependability, I collected a considerable volume of notes from direct observation of behaviours, practices, and settings. Some of this related to the interviews. I largely dismissed, for example, the struggle for commercial survival one industrialist pressed on me, given the brand of his watch, his desk

made of old teak 30cm thick, and the impressive display of contemporary Chinese art in his spacious Jakarta office. Conversely, declarations of poverty from some smallholders in the countryside rang horribly true when recounted on a rough concrete floor under a ragged thatch roof.

Independently of discourse derived from interviews, conversations or other interactions, I also recorded and brought into my analysis some straightforward observations resulting from visiting regularly, and wandering about, generally with the intention of attracting as little attention as possible, markets, supermarkets, farms and other locations. In Jakarta, where I was based, this presented little difficulty: I simply shopped in the same places repeatedly over nearly two years, and so was able to familiarise myself with the routines of the locations and the people who worked and shopped there. This also provided the opportunity to converse casually, asking after the availability of larger chickens for example, live birds, or other birds such as pigeon or quail, in the markets. Very often such enquiries were designed to triangulate findings of papers or reports I had read, or analyses I was working up in an iterative manner. In the countryside, it was more difficult not to attract attention, but in and around Majalengka, by repeatedly walking a similar route around three mid-sized poultry farms and three smallholdings, I was able to develop what I thought was a reliable representation of what went on at each location on a day by day basis, without myself having much, if any, influence on proceedings.

Notes relating to these observations went into my notebooks nearly every day and as the research process continued, I worked over this material, along with the interview transcripts, time and again with coloured highlighters, looking essentially to reduce the data, check their consistency and accuracy, and find overlaps and regularities in them. A quasi-judicial approach (Bromley, 1986) was never far from my thinking: not only was I iteratively developing my research objectives in parallel with my data analysis, but I was also seeking, in the terms determined in chapter 2, for a coherent and logical explanation for the data I was collecting. In particular I was alert for negating evidence: data that contradicted my analyses. With such large volumes of data, I was concerned to avoid a 'holistic bias' – producing a neat analysis obtained by ignoring data that did not fit.

3.5 Conclusion

This chapter has described the methodology used in researching the thesis, and some of its challenges. Drawn from the conceptual analysis presented in chapter 2, my empirical investigations have focused on identifying key actors, networks and narratives associated with

the H5N1 virus, and investigating different constructions of risk and modernity evident among the different groups that are affected by it, and the power dynamics that are at play. A range of qualitative, ethnographic methods have enabled me to explore how hybrid constructions of risk and modernity, involving social, cultural and political factors, emerged and were put into action. The following chapters draw on the empirical findings of these 22 months of engagement across multiple sites, to investigate why the response to the H5N1 has been so challenged in Indonesia. I begin at the global level, exploring the constructions of risk and modernity involved in the international policy response to H5N1.

4. Global policy

> 'Ice is civilisation.'
>
> Allie Fox in *The Mosquito Coast* by Paul Theroux (1981)

This chapter identifies the actors and networks involved in formulating the global policy response to the H5N1 virus, and investigates H5N1 risk constructions in these domains. A dominant narrative is shown to construct H5N1 risk as a deadly and economically costly global catastrophe: an influenza pandemic originating in south-east Asia, which threatens populations and economies in the global North. I argue that three significant sub-narratives underpin this construction. The first relates to H5N1 as an 'outbreak' event – a formulaic drama of communities threatened by contagion and saved by epidemiological control. The second relates to H5N1 as a disease 'emerging' from elsewhere and being transmitted through dynamic, globalising processes such as trade and travel. This links to a third sub-narrative related to broader 'health security' concerns in the global North, which is largely free from infectious disease. The chapter moves on to argue that the international organisations involved in designing, funding and implementing the global H5N1 response operate under a set of modernist framings derived from Enlightenment ideals. As discussed in chapter 2, this rationalist approach casts risk as having an objective, calculable reality which is amenable to prediction and control through science, technology and an efficient bureaucracy, and constructs the risk associated with H5N1 as a phenomenon of nature which can be objectively measured and managed. This epistemological position however produces a reductive and universalistic approach to risk that denies and excludes the possibility of multiple, hybrid constructions.

4.1 Global directions

As discussed in chapter 1, the 1997 outbreak in Hong Kong can be taken as the initial event of the H5N1 epizoosis, and the starting point for the significant international attention that became focused on the H5N1 virus can be taken as President Bush's announcement of the formation of the International Partnership on Avian and Pandemic Influenza (IPAPI) at the UN General Assembly in September 2005, and the establishment of the office of the UN System Influenza Coordinator (UNSIC), within the UN Development Group, responsible for coordinating multilateral action. It may also be noted that key prior events following the initial outbreak in Hong Kong include the reappearance of the virus in Hong Kong in 2001 and 2002, and its subsequent spread across east and south-east Asia in 2003 and 2004, with an

associated rising number of human cases and fatalities. At 5 August 2005, WHO had confirmed 112 human H5N1 cases and 57 deaths in Cambodia, Indonesia, Thailand and Viet Nam.[47] The subsequent rapid involvement of the UN's technical agencies together with the World Organisation for Animal Health (OIE), the European Commission and the World Bank, and the convening of a set of annual ministerial 'pledging' conferences, and more frequent technical conferences and meetings, has been outlined in chapter 1. The first section of this chapter examines in more detail the actors and networks that emerged during these relatively well funded processes with a view to determining the constructions of risk among them, and related constructions of modernity.

The H5N1 virus had been on US radar in 2004, with Congress providing US$25 million for 'preventing the global spread of avian influenza and preparing for pandemic influenza' in the 2005 financial year. This was divided between USAID, which received $10 million, and the Department of Health and Human Services (HHS) agency, Centers for Disease Control and Prevention (CDC), which received $15 million (Congressional Research Service, 2006:3). The resultant activities focused on laboratory, surveillance, pandemic planning and health care staff development, and USAID and CDC undertook joint planning visits to Viet Nam, Cambodia, and Laos.[48] President Bush's announcement of the formation of IPAPI, however, followed by the releases of the National Strategy for Pandemic Influenza and the more detailed HHS Influenza Plan on 1 November and 2 November 2005 respectively, was accompanied by a request to Congress for $7.1 billion, of which approximately $388 million was for global initiatives.[49] This significantly changed the scale of US ambitions. IPAPI, which aimed to generate and coordinate international political momentum and action among donor and affected nations and build capacity, was part of this scheme. It was based on a set of ten core principles which ran from Point 1: 'International cooperation to protect the lives and health of our people', to Point 10: 'Actions based on the best available science'. Between these points ran a range of ideals which included 'global political leadership', 'transparency in reporting', 'immediate sharing of epidemiological data', 'rapid reaction', 'prevention and containment',

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[47] Source: WHO. Available at: http://www.who.int/csr/disease/avian_influenza/country/cases_table_2005_08_05/en/index.html [accessed 11 November 2010]

[48] Source: Report from Country Planning Visits, US Government Emergency Response to Avian Influenza: A Plan of Action for Vietnam, Laos, and Cambodia. July 11-24, 2005.

[49] Of this $388 million, $200 million was made available to HHS to enhance international surveillance capacity; $131.5 million to USAID to implement containment efforts; $18.5 million to the State Department for diplomatic activities; $20 million to cover the potential evacuation of US government personnel and their dependents in the event of a pandemic; and $18.3 million to the Department of Agriculture to provide technical assistance in international animal surveillance (Congressional Research Service, 2006:5).

'expanded cooperation', and 'increased coordination and harmonization of preparedness, prevention, response and containment activities among nations' (ibid:46). The WHO, FAO and OIE were also listed as 'key multilateral organizations' in the response.

Just five weeks after President Bush's speech, on 24 and 25 October 2005, the Canadian Government hosted a 'Global Pandemic Influenza Readiness' meeting of health ministers from more than 30 countries and international organisations in Ottawa. The WHO's then Director-General, Dr Lee Jong-wook, gave the opening address. He articulated what would become the driving force of the response activities over the following years:

> Our concern is that avian flu could become the source of the next human influenza pandemic. The big question is: will there be a human influenza pandemic? The short answer is: yes. When will it come? I don't know but it could appear anytime. That is what we are preparing for. That is why we are here.

Dr Lee's calls for action 'to reduce the risks' would recur too. These included: 'Timely and transparent outbreak reporting, and minimizing infection in poultry, by culling infected flocks and fairly compensating farmers', as well as early warning systems 'in all affected and at-risk countries', preparedness plans, stockpiles of antivirals, risk communications, and an effective vaccine, which was deemed 'the best protection of all'.[50] The meeting concluded with a declaration that a 'multisectoral approach, beginning with the animal and human health sectors, must underlie global efforts towards coordinated pandemic planning' (UNSIC/World Bank, 2010:151). Subsequently, and again very quickly, between 7 and 9 November, WHO and FAO, together with the OIE and the World Bank, co-sponsored a conference on avian influenza and human pandemic influenza at WHO headquarters in Geneva, Switzerland. Importantly, this meeting, which was attended by more than 600 delegates from over 100 countries, reaffirmed national veterinary services as an 'international public good', and determined that their improvement 'particularly in developing countries', was central to the management of the avian influenza 'world crisis'.[51] The meeting also called for all countries to develop integrated actions plans. In his concluding statement, Dr Lee Jong-wook, said: 'The international solidarity to confront these threats is clear. The urgency of acting now is felt by us all'.[52] From the outset it is clear that the response to H5N1 was to be a technical effort and globally orientated.

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[50] Source: WHO. Available at: http://www.who.int/dg/lee/speeches/2005/influenza_readiness/en/index.html [accessed 3 May 2010]
[51] Source: OIE. Available at: http://www.oie.int/about-us/history/ [accessed 10 December 2010]
[52] Source: WHO. Available at: http://www.who.int/mediacentre/news/releases/2005/pr58/en/index.html [accessed 23 March 2010]

The Geneva meeting also agreed that there was an urgent need for financial and other resources to be made available for countries that had been affected by avian influenza, as well as for those which were most 'at risk'. Subsequently, and yet again very quickly, on 4 November 2005, the World Bank announced that it would provide US$500 million in loans to south-east Asian countries to supplement government resources, strengthen veterinary systems, and assist in culling and animal vaccination programs.[53] At the same time, plans were advancing towards the Beijing International Pledging Conference on Avian and Human Influenza, scheduled for 17-18 January 2006, which was co-sponsored by the Government of China, the European Commission and the World Bank. This conference, which was attended by over 1,000 delegates from over 100 countries, including more than 50 ambassadors and ministers, assessed financing needs at the country, regional and global levels, and ultimately US$1.8 billion was pledged in financial support (ibid:129). Aside from the previously mentioned $500 million from the World Bank, and $468 million from the Asian Development Bank, Australia pledged $56 million, the European Commission $124million, France $31 million, Germany $29 million, Japan $155 million, the UK $36 million, and the USA $334 million. Of the countries that were affected at the time, only China pledged $10 million, Korea $6 million and Thailand $2.5 million. If the pledging figures were not evidence enough, the final 'Beijing Declaration' made the direction and scope of concern clear: 'The world is faced with a re-emerging disease, HPAI, which like SARS and HIV/AIDS respects no national boundaries' (Beijing Declaration, 2006:1). Further key international meetings for the period October 2005 to April 2010 are shown in Table 1, below.

Table 1: Key international avian and human pandemic influenza conferences.

Date	Event
October 2005	First International Meeting of Health Ministers, Ottawa, Canada
November 2005	WHO Global Partners Conference on Avian and Human Pandemic Influenza, Geneva, Switzerland
January 2006	International Pledging Conference on Avian and Human Influenza, Beijing, China
March 2006	Expert consultations, Washington DC, USA
June 2006	Senior Officials Meeting on Avian and Human Pandemic Influenza, Vienna, Austria
December 2006	International Ministerial Conference on Avian and Pandemic Influenza, Bamako, Mali
March 2007	Vaccination Conference, Verona, Italy

[53] Source: World Bank Press Release, 'New Global Program to Deal with Avian Flu', 4 November 2005

June 2007	International Technical Meeting on Avian Influenza, Rome, Italy
December 2007	International Ministerial Conference on Avian and Pandemic Influenza, New Delhi, India
October 2008	International Ministerial Conference on Avian and Pandemic Influenza, Sharm el-Sheikh, Egypt
March 2009	Expert Consultation on 'One World One Health', Winnipeg, Canada
April 2010	International Ministerial Conference on Animal and Pandemic Influenza, Hanoi, Viet Nam

Sources: (1) World Bank, (2) United Nations/World Bank, (3) European Commission.[54]

4.2 Politics and pandemics

The H5N1 virus can therefore be seen to have provoked remarkable international activity and fund raising driven by concern among wealthier nations in the global North, particularly the USA. In just four months from President Bush's speech to the UN on 14 September 2005 to the close of the Beijing conference on 18 January 2006, over 100 countries had been involved diplomatically, a new UN office had been created, the relevant technical agencies had been coordinated, and US$1.8 billion had been raised. The next section of this chapter examines the risk constructions that drove this concern, and their links to a particular construction of modernity. It will be argued that three narratives predominated in these constructions, all of which are intimately related to processes associated with globalisation. H5N1 constructed as a deadly and disruptive influenza pandemic threatening a national health 'security' is examined first, followed by discussions on how an 'outbreak narrative' (c.f. Wald, 2008), and the concept of the 'emergence' of diseases, are related, particularly in the context of globalisation as seen from the perspective of the global North. In considering these narratives it should not be forgotten that at the time, the situation was cast very much as a crisis demanding urgent action, and that the circumstances of relatively uncertain science – the mutations and re-assortments of the virus could not be predicted and consequently the timing and scale of any pandemic was unknown – allowed space for processes to become political.

As mentioned in chapter 1, the influenza virus has a notorious history, most infamously causing over 50 million deaths during the 1918 - 1920 H1N1 'Spanish flu' pandemic, and an estimated two million and one million deaths during the 1956 - 1958 'Asian flu' H2N2 and 1968 - 1969 H3N2 'Hong Kong flu' events respectively. The high economic costs estimated for a pandemic today have also been noted: the World Bank suggests that such an event could

[54] (1) Available at: http://go.worldbank.org/GBS8QKKW60 [accessed 22 March 2011]. (2) Available at: http://un-influenza.org/files/Global%20Progress%20Report%202010.pdf [accessed 23 March 2011]. (3) Available at: http://ec.europa.eu/world/avian_influenza/index.htm [accessed 23 March 2011]

cause a three per cent loss of global economic output, representing US$2 trillion - US$3 trillion over a year, with events equivalent to the 1968 event resulting in US$450 billion losses, and the 1957 event US$1.3 trillion (Burns et al., 2008). Doubtlessly, as the numbers of H5N1-related human deaths rose in 2004 and 2005, and as the virus spread across Asia and into Africa and Europe in 2005 and 2006, the risk constructed around the virus in the world's most powerful corridors was that of a deadly and disruptive human influenza pandemic hitting the 'homelands' of the global North. President Bush is reported to have read, and been influenced by, J. M. Barry's best-selling book 'The Great Influenza', which was subtitled 'The Story of the Deadliest Pandemic in History' (Barry, 2004). A US government respondent, who had been closely involved in formulating the US position, said:

> If you are looking at what motivated this I would say it is not a lot of dead chickens. It's fear of a lot of things. There is no question that the high level of interest at the highest level of [US] government took place because of the fear of a 1918 style epidemic. I've been at meetings in the White House where it was said that that scenario of 1918 was not necessarily the worst case – mortality, morbidity and so on. So what drove this – I think we have to be frank – is the fear of a severe human pandemic.

Another respondent at the same meeting in the State Department said:

> In the wake of the 9/11 scenario and the transformation of the institutional response capability within the US, looking at a sort of all hazards approach, and how the White House sees that with homeland security, it was natural to see this potential threat in a broader context and to respond to it in a fairly robust manner.[55]

As such, it was recognised that an H5N1 related influenza pandemic, originating on the other side of the world, could bring a government down, as well as do drastic damage to people and economies globally.[56] The WHO's Dr Lee had made this risk construction plain in Ottowa in October 2005: 'No Government nor Head of State can afford to be caught off guard. The expected political, economic and social cost of a pandemic will be huge', and this construction is prevalent across the global North to this day.[57] In the UK, for example, the 2010 National Security Plan includes an influenza pandemic as a top priority 'Tier One' risk, along with international terrorism, cyber attacks and military crises. The report states: 'There is a high probability of another influenza pandemic occurring and, based on a range of data, [it]

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[55] Interviews, Washington DC, 11 June 2008

[56] Popular concern regarding the matter was evident in a number slim paperbacks published at the time. These included, for example: John Farndon's (2005) 'Everything you Need to Know – Bird Flu', with a foreword by Professor Tony Minson of Cambridge University's virology department; Dr. Anne Rooney's (2006) 'How to Survive Bird Flu – A Practical Guide', with a preface by Dr Andrew Coburn, Vice President of Catastrophe Research at Risk Management Solutions, Inc.; and Marc Siegal's (2006) 'Bird Flu – Everything You Need to Know about the Next Pandemic'.

[57] Source: WHO. Available at: http://www.who.int/dg/lee/speeches/2005/influenza_readiness/en/index.html [accessed 23 March 2010]

could be that up to one half of the UK population becomes infected, resulting in between 50,000 and 750,000 deaths in the UK, with corresponding disruption to everyday life' (HM Government, 2010:31). Similarly, pointing to the interconnectedness of the global economy, the OECD (2011) lists the threat of a pandemic as one of five pre-eminent threats to the world economy.

This construction of H5N1 risk is linked with two growing discourses in the global North. One concerns a technocratic approach that has been called 'vital systems security': governmental efforts to secure key infrastructures, institutions and public services against 'low probability, high consequence' events such as extreme weather, terrorist attacks, environmental catastrophes and epidemics (Collier and Lakoff, 2006:4). The other, as discussed below, concerns the intersection of national security and public health, or what has come to be called 'global health security' (Brundtland, 2003; Fidler, 2005; Heymann, 2006). Both discourses emanate from the relatively disease-free global North and assume that the problem of infectious disease is now more one of preparedness than prevention (Lakoff, 2008).

Arguably, as Scoones and Forster (2008) suggest, a deep psychological driving force, amongst both concerned citizens and their leaders, has been what Wald (2008) calls an 'outbreak narrative'. Pointing to the dramatic power such a narrative has on the cinema screen, in fiction, and in real life, Wald suggests that: 'The outbreak narrative – in its scientific, journalistic, and fictional incarnations – follows a formulaic plot that begins with the identification of an emerging infection, includes discussion of the global networks throughout which it travels, and chronicles the epidemiological work that ends with its containment' (ibid:2). Such is the potency of this narrative, concerning communities formed by, and threatened by, contagion from a hazardous nature, and the drama of epidemiology, few involved in the response, technically or diplomatically, would have been immune to an optimistic, rationalist perspective that sees science challenged, but ultimately triumphant, in the face of a global threat.

A second driving force, deeply entwined in constructions of risk in the global North associated with processes of globalisation, is the concept of disease emergence. Despite the fact that around one quarter of annual deaths globally can be attributed to infectious diseases (Morens et al., 2004; WHO, 2004), given the widespread control of such in the global North (Barrett et al., 1998), 'emerging' diseases, from the perspective of the global North, inevitably are constructed as emerging elsewhere, in other places. As a source of disease, this 'other' is easily constructed as a primitive, backward, unregulated place, which contrasts with a 'modern' world where disease is controlled. Wald (2008:34) suggests: 'An infection may be

endemic to an impoverished area but it *emerges* when it appears – or threatens to appear – in a metropolitan center of the North' [original italics]. In the case of H5N1, the involvement of animals as a source of infection adds to this sense of othering. Very few people in industrialised, or post industrial, countries have much to do with live animals on a day-to-day basis, except for well-doctored pets. In fact, few 'emerging' pathogens actually are newly evolved. Influenza viruses, as has been discussed, are subject to genetic change and evolution, but anthropogenic changes often related to deforestation, urbanisation, and industrialisation account for most 'emerging' diseases, and the recent rapid growth in human and animal populations, international trade and transport systems, and new types of behaviour associated with diet, for example, are argued to be largely responsible for enhanced transmission (Lederberg et al., 1992). Citing the reappearance of cholera in Peru in 1991, plague in Surat, India in 1994, and an outbreak of lethal haemorrhagic fever caused by the Ebola virus in Kikwit, Democratic Republic of the Congo (formerly Zaire) in April 1995, Calain (2007) suggests that the 1990s saw the rise of the 'emerging diseases worldview', which he suggests is a post-colonial concept rooted in new bio-medical concerns and perceived threats from a 'de-territorialized' world. Such perspectives complicate both agenda setting and implementation, given that such concerns regarding global health are easily interpreted as policies designed to protect rich, industrialised countries (Davies, 2008).

Given the comments from US government officials above, linking the pandemic threat with homeland security, this analysis would appear to be relevant in the context of H5N1: the overriding concern in the USA was to keep the virus beyond its borders. Following the terrorist attacks on the USA on 11 September 2001, and the more recent deaths and devastation caused by Hurricane Katrina in late August 2005 (less than a month before President Bush addressed the UN), what Furedi (2005) calls the 'politics of fear' was at play. In the terms of Beck's 'Risk Society' thesis, discussed in chapter 2, it was also the case that public concern was heightened by the uncertainty of the threat, and the uncertainty of the scientific knowledge regarding it, yet the public had little option but to rely on governmental institutions in which they had diminishing, or variable, trust. The pandemic risk had become a political issue, and demand for the authorities to respond was high. In these circumstances it was imperative for the President to be seen to be doing something, even if the epidemiological consequences were uncertain, and he turned to the tools he had most obviously at his disposal: science, rationality and the most extreme form of government activity – military action. Addressing the UN, President Bush stressed that the primary objective was to track the H5N1 virus so that 'the

world scientific community can analyze the facts'.[58] Adopting a militaristic posture, he also raised the possibility of him authorising troops to enforce quarantines as Commander in Chief. Driven by political imperatives, a rationalist approach had been deployed which constructs the risk associated with H5N1 as a phenomenon of nature which can be objectively measured and then managed through science, technology and an efficient bureaucracy. The USA was ready to declare war on a virus, just as it had declared war on 'terror'.

4.3 United nations?

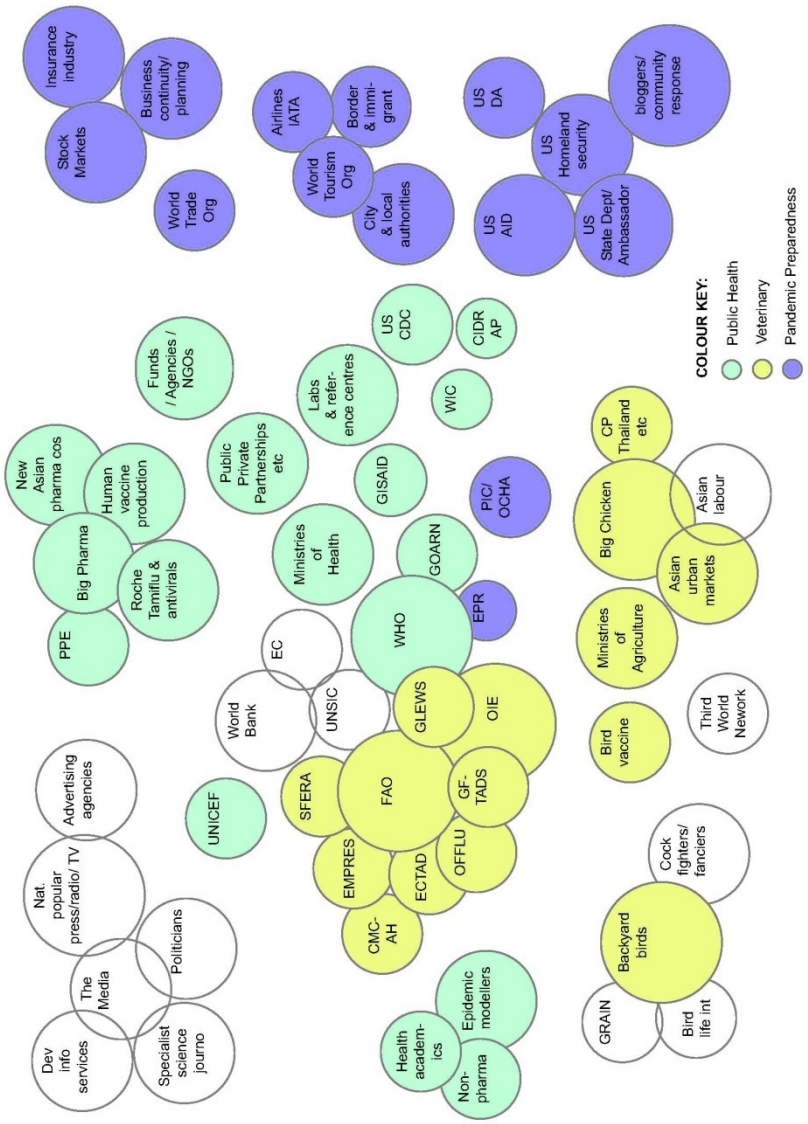
The first section of this chapter has introduced the key actors and networks involved in the initial international policy response to H5N1, and the explicit and underlying narratives that drove determined, and urgent, international action. The predominant risk constructed around the virus has been shown to relate the possibility of a deadly and disruptive influenza pandemic in the global North. One aspect of this relates to globalisation in the form of the increased ease and speed with which pathogens travel around the planet. Other aspects relate to less obvious processes associated with the performances (and optimism) of an 'outbreak' narrative, and the sense that new diseases emerge from 'other' dangerous and distant places. In the eyes of the prime mover in the response, the USA, the solution was to be found in scientific activity and rigorously deployed government authority, including the military if necessary. The second section of the chapter moves on to examine in more detail the main technical agencies that became involved in the response, with a view to elucidating their constructions of risk and related constructions of modernity.

A diagram of the actors and networks that developed around the response to H5N1 is given in Figure 5, below. It can be seen that in total, a large number and wide range of organisations and interests became involved at a global level. The six organisations clustering at the centre of the diagram – FAO, OIE, WHO, UNSIC, the EC and the World Bank – have been key actors in the response at the global level, following the impetus, as discussed above, introduced by the US Executive. Leboeuf (2011:19-20) points to the FAO/OIE/WHO grouping as central, suggesting further that the global governance of avian influenza came to represent 'a form of oligopoly' between FAO, OIE, WHO, UNICEF, UNSIC and the World Bank. The perspectives, responsibilities and risk constructions of the three main technical agencies – FAO, OIE, WHO – are discussed below, and an outline is given of the extensive surveillance networks that have been created. The role and perspectives of UNICEF, which had a specific

[58] Quoted in 'Trouble for the Flu Fighters', Time magazine, 24 October 2005

responsibility for public awareness communications, are examined further in chapter 9, but those of the EC, UNSIC, and the World Bank, although important, are not discussed in detail as their roles have focused more on convening, coordinating, financing and reporting, than defining the activities that constituted the response.

Figure 5: The international avian influenza response: an actor-network diagram.



Source: after Scoones and Forster (2008) p.4

Health without borders

As its name implies, the World Health Organization, one of the original agencies of the United Nations, is an institution with a global reach, promoting the global norms of global bio-

medicine. Its constitution, signed by representatives of 61 states on 22 July 1946, includes as Article 1: 'The objective of the World Health Organization [...] shall be the attainment by *all peoples* of the highest possible level of health' [italics added], and the first item of Article 2 is: 'In order to achieve its objective, the functions of the Organization shall be: (a) to act as the directing and co-ordinating authority on international health work'. [59] Today, with a membership of 193 countries (and two associate members), it is responsible for providing leadership on global health matters, shaping the health research agenda, articulating evidence-based policy options, providing technical support to countries, and monitoring and assessing health trends, as well as setting norms and standards.[60] The WHO therefore can be seen to have a dual role. It is both a global moral voice for health, and an international authority serving its member states with respect to public health recommendations and regulations.

Central to the WHO's approach is its global reach and its responsibility for coordinating international action in the face of disease threats. In this, the outbreak of Severe Acquired Respiratory Syndrome (SARS) in Hong Kong in 2003 served as an important precursor to the H5N1 epizoosis, as well as an important indication of how rapidly a novel pathogen could emerge and spread. SARS prompted the first WHO global alert for over a decade and the organisation was centrally involved in leading and coordinating the field and laboratory investigations that quickly identified the etiological agent and subsequently managed the outbreak.[61] The response was lauded as an almost ideal model of global action to bring a new and dangerous disease under control. Parashar et al. (2005:232) suggest that an 'intense spirit of global co-operation' was one of the hallmarks of the response, which they characterise as an 'unprecedented collaborative effort', demonstrating clear organisational structures, well-defined roles and responsibilities, strong leadership, political will, and responsible media reporting. Early in the event, in an online discussion, Kickbusch (2003) had made plain that:

> ... individual nation-states are unequipped to manage something like SARS by themselves. In an interconnected world, we must acknowledge the truly global nature of public health, and nation-states must commit to full cooperation if a disease like SARS is to be contained.

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[59] Source: WHO. Available at: http://www.who.int/governance/eb/who_constitution_en.pdf [accessed 5 October 2011]

[60] Source: WHO. Available at: http://www.who.int/about/en/index.html [accessed 5 May 2011]

[61] Dr. Margaret Chan, who became WHO Director-General on 9 November 2006, had been in the front line of these activities, as well as dealing with H5N1 in Hong Kong in 1997 as the Territory's then Director of Health.

Similarly, the revised International Health Regulations (IHR) 2005[62], which were due to be implemented in 2007, but which were actually implemented early in 2004 by some countries in response to H5N1, were seen by many as a breakthrough in global cooperation and cross border disease control, as well as a historic development for international law on public health (Baker and Forsyth, 2007; Fidler and Gostin, 2006). The previous 1969 regulation was severely constrained as it applied to just three diseases – cholera, plague and yellow fever – which had been identified as 'global' threats at the First International Sanitary Conference held in Paris in 1851 (Huber, 2006). The new regulations were expanded to cover any 'public health emergency of international concern' (PHEIC), the definition of which was based on empirical risk assessment principles, and which included biological, chemical and radiological releases, and naturally occurring, accidental and intentional events. Furthermore, the WHO was empowered to use a wider range of surveillance sources, including, for the first time, unofficial ones. For their part, states were required to establish National Focal Points, with defined core capacities for surveillance and response, which were responsible for communication with the WHO and for the collation and dissemination of information within each state. This signified an important shift in the international governance of public health issues, with a ceding of national sovereignty, at least in theory, in the face of a global threat. It defined a new form of multilateral response to international health issues, very much framed in terms of assuring global health security with the WHO at its core. IHR 2005 make it very clear that from the perspective of the WHO at least, infectious diseases are a global concern requiring a global response.

From its earliest days, the WHO has recognized influenza as a significant threat to global public health, establishing the World Influenza Centre (WIC) at Mill Hill in north London in 1948 (Kaplan, 1980). Central to the WIC's activities has been the creation of a collaborative international network, along with the preparation and use of reference reagents, standardised techniques for the isolation and identification of virus strains, and procedures for the production and testing of vaccines, the first of which was introduced in 1945. Activities associated with vaccine production have been described as the 'cornerstone' of WHO work on influenza (Dehner, 2010:481). Twice a year (once for each of the planet's hemispheres), a panel of experts decides which strains of the influenza virus are to be included in the forthcoming seasonal influenza vaccine, and seed viruses are shipped to manufacturers for production. Doshi (2009; 2011) coins the phrase 'virus-centric thinking', suggesting that the

[62] See: http://www.wpro.who.int/NR/rdonlyres/61AE8DBE-4C7E-43F8-867E-B21C355301F2/0/IHR_booklet.pdf for an outline of IHR 2005 [accessed 10 November 2008]

WHO's technically led approach, which distinguishes distinct 'pandemic' and 'interpandemic' phases according to the genetic composition of the virus, ignores the fact that the severity and impact of epidemics occur along a spectrum, and that responses need to be calibrated to the threat rather than driven by rigid categories. The virus as a phenomenon of nature requiring, and amendable to, scientific investigation and technical control can therefore be seen to be central to the WHO's approach to influenza.

The WHO published its first global pandemic influenza preparedness plan in 1999, two years after the H5N1 Hong Kong outbreak (WHO, 1999). The plan was updated in 2005 (WHO, 2005) and April 2009 (WHO, 2009). Measures to control pandemic influenza are broadly divided into two categories: pharmaceutical interventions, such as vaccines and antiviral drugs, and non-pharmaceutical interventions, such as the isolation of patients, movement controls and quarantine. The first stands clearly as a scientific, technical and rationalist intervention. The second turns on a more complex assemblage involving Enlightenment notions of the 'medical police' (*Medizinalpolizei*), the moral right associated with a preventative approach orientated towards human well being in the future.[63] More specifically, the 1999 plan formalised a split between processes of 'risk assessment', which includes data collection and evaluation, and 'risk management', which includes defining the potential risks and benefits, and subsequently making recommendations to the appropriate authorities and the public (Snacken et al., 1999). As has been shown in chapter 2, this approach which implies that risk is to be assessed and managed by expert authorities with a lay public being subjected to appropriate risk communication strategies, is an outcome of a reductive technocratic position.

With the experience of successfully dealing with SARS, with global pandemic preparedness plans well advanced, and armed with a much expanded set of international regulations, the WHO's recommended strategic actions for responding to H5N1 in south-east Asia offer a model of rational planning: '1. Reduce opportunities for human infection; 2. Strengthen the early warning system; 3. Contain or delay the spread at source; 4. Reduce morbidity, mortality and social disruption; and 5. Conduct research to guide response measures' (WHO, 2005:1). The only non-technical challenges noted in this document (subsequently amended) relate to possible lack of compensation for farmers for culled birds, thus reducing the incentive to report outbreaks, the 'well-known and avoidable behaviours with a high risk of infection [that] continue to occur in rural areas', and the fact that once a pandemic is underway, national governments will make the protection of their own citizens

[63] The term *Medizinalpolizei* comes from Johann Peter Frank's 'System einer vollstandigen medicinischen Polizey' (1779 - 1817) cited in Rosen (1993:137-138)

the first priority. For the WHO, risk is doubtlessly an objective measurable phenomenon, distinct from public concern and worry, and subject to technical amelioration.

Crucial to this view within the WHO was a set of models devised in 2005 which showed the potential of containing isolated outbreaks, given prompt detection of the virus followed by rapid deployment of antiviral drugs and public health measures (Ferguson et al., 2005; Longini et al., 2004). The efficacy of 'rapid-containment' operations, however, is open to question, beginning with the initial premise of accurate and effective surveillance. China set a precedent of sorts by rigorously suppressing information about SARS in 2002 and 2003, but little appears to have been learnt in the region. Every Asian country that has suffered major outbreaks of H5N1 has initially concealed them. In China the virus was first detected in mid-1996, yet health officials did not make any public announcements until early 2004. In Viet Nam in 2003, the imminent 22nd Southeast Asian Games were one reason given for the delay of an official announcement.[64] In Thailand, which was then exporting chicken meat worth US$1.3 billion annually, a diplomatic row erupted in January 2004 when H5N1 infection was officially declared just three days after a senior EU official had been assured that there was 'no evidence of any bird flu in Thailand'.[65] In Indonesia, H5N1 was confirmed in October 2003, but the government made no announcement until forced to by neighbouring countries' trade bans and media pressure in January 2004.[66] Given these examples, which concern the relatively straightforward matters of surveillance and reporting at the very start of the process of outbreak management, the WHO's purified understanding of the virus as a measurable and controllable phenomenon of nature appears challenged.

With the main ethos of public health now one of prevention, which brings with it future-leaning calculations associated with risk, the WHO operates as a supranational body charged with arranging the global public good of a world free from infectious disease, and encouraging the 'development' of less prosperous regions. The organisation claims what is effectively a moral right in pursuit of this aim, which from the organisation's perspective, is a matter that stands separately from politics. Furthermore, with modern bio-medicine emphatically concerned with scientifically investigating an objective independent reality, it is suggested that it is self-evident that the WHO represents an agency promoting universalistic, scientifically-derived norms and standards that cast risk as real, and open to objective

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[64] Source: Time magazine, 24 January 2004. Available at: http://www.time.com/time/magazine/article/0,9171,579024,00.html#ixzz0r2MWDbdG [accessed 5 June 2010]

[65] Source: Sofia News Agency, 5 February 2004. Available at: http://www.novinite.com/view_news.php?id=30672 [accessed 5 June 2010]

[66] Source: Jakarta Post, 24 January 2004

measurement and rationalist, bureaucratic management. As the organisation is learning, however, politics does impinge in matters concerning influenza, introducing hybrids that the organisation finds surprising and even shocking. The Indonesian health minister's claims of 'sovereignty' over Indonesian viral samples in 2007 sent shock waves through the organisation, for example. More recently, the organisation has been shaken by allegations of collusion with pharmaceutical companies in its declaration of the 2009-10 H1N1 'Swine flu' pandemic (Cohen and Carter, 2010). Even within the purified world of bio-medicine, influenza is a potent political matter.

Regulating animal health

As discussed in the first section of this chapter, although the October 2005 Ottawa meeting focused on human health, it was recognised there, and more forcefully at the subsequent Geneva and Beijing conferences, that veterinary services would be vital in responding to H5N1. At that time, and to date, H5N1 is primarily the cause of a disease of animals, and it was accepted at an early stage that it was logical to address the virus in animals before it infected humans. This brought the lesser-known, and significantly smaller, World Organisation for Animal Health (OIE) into the frame. Headquartered in Paris, the OIE is not an official UN body, but it is the recognised intergovernmental body responsible for improving animal health worldwide, and its standards serve as important references for World Trade Organization sanitary rules. Predating the WHO, it was founded in 1924 as the International Office of Epizootics, following an occurrence of rinderpest in Antwerp which had been transmitted by animals travelling from India to Brazil, and held its first conference in Geneva in 1928, establishing in the organisation's own words, 'the basis for an international sanitary police'.[67] In 2011, with only some 70 headquarters staff, it has 178 member countries and territories, including Indonesia, and official relations with 36 other organisations, including an agreement with FAO from 1952 (which was renewed in 2004 as part of the avian influenza response), and the WHO from 1960. In 1975, the FAO, OIE, and WHO published a joint report, 'The Veterinary Contribution to Public Health Practice', which established veterinary public health (VPH) as an area of cooperation among the three organisations. Each OIE member country undertakes to report any occurrence of 96 'Listed Diseases' detected on its territory, including HPAI, information which is disseminated by OIE via its official publication 'Disease Information', the online World Animal Health Information Database (WAHID), and email. Each year at the OIE World Assembly in Paris, the status of Member Countries in regard to four priority animal

[67] Source: OIE. Available at: http://www.oie.int/en/about-us/history/ [accessed 15 May 2011]

diseases is reviewed and published.[68] The OIE also distributes scientific information on animal disease control, and provides technical support particularly with respect to developing veterinary services in poor countries.[69]

As noted in chapter 1, a lethal and highly contagious disease of poultry has been noted to have occurred as early as 1872 in the USA and 1878 in Italy. These outbreaks, and subsequent and increasing outbreaks of poultry disease with high mortality, were generally described as 'fowl plague'. Only in 1955 was the causal virus shown to be type A influenza, and even as late as 1983, the OIE included within the definition of 'fowl plague' 'a clinical disease of poultry caused by any serotype of avian influenza A virus', and the 1986 edition of the international zoo-sanitary code (OIE, 1986) made no real distinction between avian influenza and Newcastle disease from the aspect of international trade (Lancaster, 2003:385). Nevertheless, despite the relatively recent official recognition of influenza viruses as the cause of avian influenza, the OIE is clear about the response required to it:

> OIE affirms the most effective strategy for dealing directly with avian influenza [is] early detection and early warning, rapid confirmation of suspects, rapid and transparent notification, [and] rapid response (including containment, management of poultry movement, zoning and compartmentalization, humane stamping out and vaccination where appropriate).[70]

An interviewee with inside knowledge of the OIE put it more simply, and forcefully: 'We reckon that eradication at source is best'.[71]

Perhaps even more extremely than in the case of the WHO, the OIE can be seen to depend on, and promote, a reductive construction of risk that makes no consideration of contextual factors, and its central role as a global authority setting sanitary standards must militate against anything other than adopting a rigorous, universalistic position. Article 2 of the 24 May 2004 Agreement made between the FAO and the OIE (which makes no explicit reference to H5N1) states:

> The OIE is primarily responsible for the: a. Establishment of standards, guidelines and recommendations relevant to animal diseases and zoonoses […] b. Development and updating of international science-based reference standards and the validation of diagnostic tests… (OIE, 2004).

A veterinarian interviewee expanded on this in the context of the H5N1 response:

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[68] The disease are: Bovine spongiform encephalopathy (BSE), Contagious bovine pleuropneumonia (CBPP), Foot and mouth disease (FMD) and, until it was eradicated in 2010, Rinderpest.
[69] Source: OIE. Available at http://www.oie.int/about-us/ [accessed 15 May 2011]
[70] Source: OIE. Available at: http://www.oie.int/animal-health-in-the-world/web-portal-on-avian-influenza/early-detection-warning-diagnostic-confirmation/ [accessed 15 May 2011]
[71] Interview, London, 13 May 2008

> A lot of countries remain very under prepared to face avian flu. The immediate response is to reach for the OIE guidelines. And the interpretation of these is problematic. […] The OIE Manual does not take account of the context. The context must include political, social, economic issues. But none of these are thought about. […] One of the problems is that within veterinary advice systems the core advisors are nearly all lab vets, not epidemiologists for example. These are the chief technical advisers in government and agencies. The focus is on diagnosis and detection of the disease agent. This is seen as the most important thing. This is a limited view when the disease is in a population – and the population exists in a social context.[72]

Like the WHO then, the OIE constructs modernity as an ordered world free from disease. As a standards setting authority, the organisation can by definition be demonstrated to be rationalist and universalist in its approach. Constituted of the Chief Veterinary Officers (CVOs) of its member states, the organisation is technically focused, and charged with monitoring animal health, there is little room or need within the organisation to consider the complexities and vagaries of human culture. With its focus on animals, it can even more robustly promote and insist on a purified nature separate from society than the WHO. Furthermore, the organisation's provision of technical support in developing countries, although valuable, rarely adds up to more than the encouragement of poorer regions to adopt the standards and methods of the global North. As can be seen in its recommendations for dealing with HPAI, and in the comments of its critics, these make little concession to the environments or cultures into which they are being deployed. The old joke about veterinarians, recounted by more than one interviewee, might be recalled: 'They are like doctors, but lack the human touch'.

Feeding the poor

Established in 1945 in Quebec, Canada, and now headquartered in Rome, the Food and Agriculture Organization (FAO) is a specialised agency of the United Nations focused on international efforts to defeat hunger. Its stated objectives are to act as a neutral forum for nation states to negotiate agreements and debate policy, help developing countries and countries in transition modernise and improve agriculture, forestry and fisheries practices, and serve as source of knowledge and information, with the aim of ensuring good nutrition for all.[73] In 2011 it has 191 member nations, one associate member and one member organisation, the European Union. Animal diseases, particularly what are referred to internally as Transboundary Animal Diseases (TADs) were not a new issue for the organisation: in 1994 it had established the Emergency Prevention System (EMPRES) for Transboundary Animal and

[72] Telephone discussion, Brighton, 11 March 2008
[73] Source: FAO. Available at: http://www.fao.org/about/en/ [accessed 4 June 2011]

Plant Pests and Diseases. Nor was collaboration with other agencies novel. In 1963, for example, the FAO and the WHO had jointly created the *Codex Alimentarius*, a collection of internationally recognised standards, codes of practice, guidelines and other recommendations relating to food, food production and food safety.

Faced with a resurgence of H5N1 related avian influenza in Asia in 2003-4, the Animal Production and Health Division (AGAH) of the Agriculture Department had raised an alert, and in February 2004 the organisation provided US$5.5 million from its own resources to address avian influenza in Asia, and called an emergency meeting in Rome involving the WHO, the OIE and experts from 14 countries. The document that emerged set a technical tone for the response which echoed WHO and OIE analysis and prescriptions (FAO/OIE/WHO, 2004:1-2). Origins of the epizoosis included: '... spread as a consequence of failure of surveillance, early warning, and control of movement of infection between domestic poultry' and 'the lack of timely reporting of infection to the national competent authorities, OIE and other international bodies...'. Notes on control and eradication strategies included: 'Disease awareness, early detection and notification, are pre-requisites…', 'Biosecurity is an essential part of the control…', and 'stamping out is the preferred control option [which] should be used on all flocks exhibiting clinical disease'. Vaccination, it was proposed, was to be 'used either as a tool to support eradication, or as a tool to control the disease and reduce the viral load in the environment'. Within one year, these principles were encapsulated in a more formal document: 'A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza (HPAI)', which was published jointly by the FAO and OIE in collaboration with the WHO in May 2005 (FAO/OIE/WHO, 2005). The foreword to this document suggests that it was responding to a call for 'a master coordination plan… with a global vision… and goal towards diminishing the risk of avian influenza to humans and poultry'. With an indicative budget of US$100 million over the first three years, it targeted five countries for control: Cambodia, Indonesia, Lao PDR, Thailand and Viet Nam.

In 2011, now with a wider geographical concern, the FAO is the central agency responsible for coordinating global surveillance and response activities for H5N1, and other animal influenza strains with pandemic potential, in collaboration with the OIE and the WHO. The formal OIE reporting protocols have been mentioned above. Central to the WHO's surveillance activities, as part of the Global Alert and Response (GAR) programme, is the Global Outbreak Alert and Response Network (GOARN), which since April 2000 has sought to bring:

> ... agreed standards to international epidemic response through the development of Guiding Principles for International Outbreak Alert and Response and operational protocols to standardize epidemiological, laboratory, clinical management, research,

> communications, logistics support, security, evacuation and communications systems.[74]

The network involves data collection from a wide range of sources, including over 120 partner institutions, official national reports, informal sources such as those from the Global Public Health Intelligence Network (GPHIN), which includes multilingual media and internet searches, the ProMed reporting system, and the Global Infectious Diseases Epidemiology Online Network (GIDEON) database. The physical centre of this network is the J.W. Lee Centre for Strategic Health Operations Centre (SHOC), a former underground cinema in the WHO headquarters in Geneva, which was opened in May 2004.

In Rome, the equivalent and closely linked hub at the FAO is the Animal Health Crisis Management Centre (CMC). This brings together data from the Emergency Prevention System (EMPRES) for Transboundary Animal and Plant Pests and Diseases which, as mentioned above, was established in 1994, the Emergency Centre for Transboundary Animal Diseases (ECTAD), which was established in December 2004 to complement EMPRES and strengthen FAO's capacity to respond to HPAI specifically, and the Global Early Warning and Response System (GLEWS) for Major Animal Diseases, including Zoonoses, which formalised the collaboration between FAO, OIE and WHO in early 2006.[75] A related organisation, formed in 2007, is the OIE/FAO Network on Animal Influenza (OFFLU), but this is more focused on sharing and exchanging data and materials, including virus strains, and highlighting influenza research needs, than surveillance and data collection.[76] The central and extensive role the FAO plays in implementation of H5N1 global policy, in particular the practicalities of surveillance and response as observed in Indonesia, is discussed in more detail in chapter 8.

The FAO then operates under a similar set of technical, rationalist constructions of modernity as do the WHO and the OIE, concerned with progress and order. Furthermore, at the level of global policy, the FAO joins the WHO and OIE in subscribing to a reductive, universalist epistemological position that constructs H5N1 risk as a phenomenon of nature which can be objectively measured and managed. As the agency charged with addressing global hunger, however, the risks constructed around H5N1 within the FAO extend beyond global pandemic concerns to include the threats to animal health, food security and the livelihoods of poor people, particularly those keeping poultry. Several interviewees at FAO headquarters stressed this fact. One said:

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[74] Source: WHO. Available at: http://www.who.int/csr/outbreaknetwork [accessed 10 May 2011]
[75] See: http://www.fao.org/ag/againfo/programmes/en/empres/home.asp; http://www.fao.org/ag/againfo/programmes/en/empres/ah1n1/Ectad.html; http://www.who.int/zoonoses/outbreaks/glews/en/index.html [accessed 19 May 2010]
[76] See: http://www.offlu.net/index.html [accessed 19 May 2010]

> The US context is that AI is a bio threat! Keep it out of the US! It's secondary that people are dying elsewhere. But FAO is obliged to deal with the wider picture. Livelihoods. Trade. FAO is a development organisation obliged to deal with these things.[77]

Whilst the FAO has little option but to follow the OIE's global, technical prescriptions for addressing H5N1, and indeed those of the WHO, the organisation's mandate is more hybrid, necessarily involving culture as well as a purified nature, and politics as well as science. As will be seen in chapter 8 however, this hybridity creates challenges for the organisation in Indonesia, both in national headquarters and in the field.

4.4 Conclusion

Investigating the dominant constructions of modernity and risk that shaped the international response to the H5N1 virus, this chapter has argued that the driving actors and networks operate under a set of principles derived from Enlightenment ideals characterised by Harvey (1990:12) as a process involving 'the scientific domination of nature, which promised freedom from scarcity, want, and the arbitrariness of natural calamity'. According to Rosen (1993:215) epidemics indicate the need for effective public health administration with 'terrifying urgency' and set in motion 'the administrative machinery for disease prevention, sanitary supervision, and, in general, protection of community health'. This rationale, which is easily cast as a global public good requiring a rational, legalistic, bureaucratic response based on surveillance, intervention and control, coupled with ideas of benevolent and progressive 'modernisation' processes in less developed regions, underlies the constructions of modernity that motivate the three main agencies – the WHO, the OIE and the FAO. Constructing H5N1 risk primarily as a deadly and costly influenza pandemic, these globalised, highly rationalised networks and organisations have been shown to be grounded in an epistemological position that constructs risk as universal, calculable and manageable, and assumes that nature is separate and controllable through a combination of science and technology and a stable and efficient bureaucracy. Variations in the degree to which the agencies purify the virus as an object of nature are, however, evident. Although each of the agencies proclaims itself as 'technical', and strives to operate in a scientific realm separate from politics, the standards setting OIE presents the purest construction of the virus. The FAO demonstrates hybridity in its risk constructions, as the organisation's mandate extends to include food security and livelihoods concerns. The WHO is driven by a purified construction of the virus, but as the clarity of a modernist, universalist, globalised public good gives way to more complex framings such as

[77] Interview, Rome, 30 January 2008

‘global health security’, ‘vital systems security’ and ‘homeland security’, the organisation is increasingly finding itself unwillingly embroiled with hybrid constructions of both modernity and risk.

The following chapter outlines and analyses the cultural and political terrain of Indonesia where these modernist aspirations and prescriptions landed.

5. Indonesia: cultural and political background

> 'No one seems to realize that Indonesia is entering a period of social revolution. The signs are there. It can be seen in the farmers who, having had their land stolen from them during the New Order, are now taking it back by force. It can be seen in the protests by farmers outside regional parliament buildings. It can be seen in the attacks on hundreds of police and military posts. In the past, these very same people would have let themselves be robbed of their voices, but now they are fighting back.'
>
> Pramoedya Ananta Toer, *Time* magazine, 6 August 2001.

The previous chapter has shown that the international organisations involved in funding and designing the H5N1 response operate under a set of modernist framings derived from Enlightenment ideals. This chapter argues that this position finds little correspondence with current political or cultural norms in Indonesia. Examining the recent dramatic shifts in the country's political landscape, the chapter first demonstrates that political and economic ruptures are unexceptional, and that trust in state institutions, which has always been lacking, is currently in a heightened state of flux as a result of extensive democratisation and decentralisation processes. The chapter continues by examining the remarkable number of so-called natural hazards, and other dangers, in the territory, and the responses they generate. The objective is to set H5N1 risk, as constructed by the international organisations leading the response, in the context of everyday life in Indonesia, and to begin to contrast the universalist, rationalist constructions of modernity of the international organisations charged with responding to the virus, with the fluid and dynamic constructions of modernity evident in Indonesia. The chapter shows that the internationally defined H5N1 response found a particular and dynamic setting in Indonesia, where historical events and social forces have resulted in constructions of risk and modernity that do not necessarily coincide with those based on Enlightenment principles.

5.1 Ruptures and revolutions

From a perspective that defines 'modern' as 'a new regime, an acceleration, a rupture, a revolution in time' (Latour, 1993:10), Indonesia is arguably one of the most modern nations in the world. Declaring independence on 17 August 1945, 11 days after the nuclear attack on Hiroshima, and fighting a guerrilla war in support of it until the Dutch transferred sovereignty in December 1949, the nation was born out of revolution following over four centuries of rule by Portuguese, English and Dutch colonial powers. Further violent ruptures occurred in the mid-1960s, when the nationalistic, quasi-socialist policies of the charismatic first president, Sukarno, wrecked the economy. From 1968, when he was formally appointed, President

Suharto reversed many of Sukarno's policies and initiated a 'New Order', which stressed economic development (*pembangunan*) as a marker of progress and modernity, and was to be delivered through a set of five-year plans (*repelita*) running from 1969 to 1994. These saw foreign debt rescheduled, an inflow of aid and investment, and significant economic growth: the proportion living below the poverty line reduced from around 60 per cent in 1970 to around 11 per cent in 1997 (Radelet, 1999). 1998, however, saw the sudden and dramatic collapse of Suharto's regime. Unlike the 1960s, the trigger was external – an Asian-wide financial crisis emanating from Thailand which led to panic among foreign creditors and investors – but as the economy contracted by some 13 per cent, and civil society realised the severity and extent of corruption, collusion and nepotism that were plaguing political institutions, the country plunged into political and economic turmoil and rioting (Thee, 2009). *Krismon* (*krisis moneter* – monetary crisis) led to Suharto being forced to resign in May 1998 and his vice-president, B.J. Habibie being sworn in as president. In a state of the nation address on 15 August 1998, Habibie suggested that the proportion in poverty had soared to 40 per cent.[78] Fabiosa et al. (2004:2) report real per capita income dropping from $1,000 in 1996 to $205 in 1998. This might be modernity as a 'rupture' but it is not modernity as rational, ordered progress.

The post-1998 *Reformasi* era was initially seen as one of social justice, new opportunities, and openness. The regime liberalised, political prisoners were released, controls were lifted on the media, independent political parties and unions were sanctioned, and political and economic stabilisation became the main tasks of government. The changes were so radical they allowed a redrawing of national borders when control was relinquished over East Timor (now Timor-Leste) in 1999. In the same year, the country held its first free legislative elections and the People's Consultative Assembly (MPR) subsequently selected Abdurrahman Wahid as president, who offered the vice-president position to Megawati Sukarnoputri (Sukarno's second child and first daughter). When Wahid was implicated in two corruption scandals in July 2001, however, and impeached, Megawati was sworn in as the fifth president. Old traditions of nepotism, corruption and collusion persisted.

In July 2004, the first direct presidential elections were held and Susilo Bambang Yudhoyono (known by his initials SBY) won a clear victory in a second round run off against Megawati. As well as free elections, administrative decentralisation became a key dimension of political change. The World Bank (2003:1) calls the 1999 decentralisation legislation,

[78] Quoted in Jakarta Post, 16 August 1998

implementation of which began on 1 January 2001, a 'Big Bang'.[79] One of the most centralised countries in the world was being transformed into one of the most decentralised with almost all substantive power (except in foreign affairs, international trade, monetary policy, national security and the legal system) being devolved to the regency, a sub-provincial administrative unit (Choi, 2007). This was a key element in the reform strategy of the International Monetary Fund (IMF), proposed in 1998, and widely considered essential to resolve the regional and ethnic tensions that had resulted from Java's historical hegemony and the centralising policies of Suharto's regime. Crucially for the control of H5N1, or lack of it, the delivery of both veterinary and health services was decentralised as part of this process, and the technical services associated with the former in particular were considered a matter of little importance by the new, and often inexperienced, regional leaders.

Few citizens, however, have yet to see substantive benefits from this administrative re-ordering. In the Suharto era, national interests were infamously subordinated to the business interests of the president, his children and his supporters, and the so-called 'royal family' prospered, amassing a fortune estimated to be several billion dollars (McLeod and MacIntyre, 2007). Campbell (1999) describes the policy orientation in the 'New Order' period as 'reverse land reform'. SBY is more favourably regarded, and has made much of his reputation as 'Mr Clean', but corruption is widely perceived to remain endemic (Kimura, 2011). Again this sets Indonesia at variance from the modernist ideal of an efficient, transparent bureaucracy, and complicates practically every aspect of government and commercial activity. One interviewee for this study, a Jakarta-based professional, said: 'Us honest citizens feel completely overwhelmed. The scale of corruption is impossible to comprehend for those that do not have to live with it every day'.[80] Although Erawan (2007) reports significant variations in the style of politics across the country, with local state capture and rampant corruption in some jurisdictions, and deepening democracy and the emergence of effective government in others, decentralisation has, according to many commentators, made the situation worse. Some suggest that local elites have co-opted the new institutional reforms for their own benefit (Roth, 2007; Simandjuntak, 2009). Robison (1996:82) uses the term 'politico-bureaucrats' to refer to state officials who are able 'to appropriate the offices of the state apparatus and […] exercise authority over the allocation of resources and access,' and argues that this group, which dominated politics during Suharto's New Order, has remained a powerful force in the post-New Order period. Jamie (2009) argues that local elite capture and

[79] The relevant legislation is Law No. 22/1999 on Governance (revised by Law No. 32/2004) and Law No. 25/1999 on Financial Balance between the Central and Local Governments.
[80] Interview, Jakarta, 8 February 2010

the proliferation of badly targeted taxes are strangling local economies. Heryanto and Hadiz (2005) suggest that the disorganised state of civil society and the weakness of organised labour and farmers point to the rise of authoritarianism in new guises. Webber (2005) indicates that deeply embedded patron-client networks impede the liberal ideal of political equality. Underlying these analyses is Transparency International's 2010 Corruption Perceptions Index which ranks Indonesia equal 110th (along with Benin, Bolivia, Gabon, Kosovo and the Solomon Islands) out of 178 countries surveyed, with its Global Corruption Barometer indicating that the parliament, the police, political parties, public officials and the judiciary are particularly poorly regarded.[81] Forty-three per cent of those interviewed for the survey felt that the level of corruption has increased over the past three years.

The relationship between failed or failing trust in institutions and risk has been discussed in chapter 2. Lack of trust, or failing trust, in protective institutions has been shown to be intimately related to risk in the reflexive society that is such an important feature of 'high modernity'. Given that Indonesian citizens have very little trust in the institutions of government, even in a new democratic era,[82] it might be expected that risk would be ubiquitous. However, as will be discussed below, hazards abound in Indonesia, but only in certain, specific cases are they constructed as controllable, or the responsibility of government. One explanation might be that Indonesians regard shocks and instability as normal. Another might be that if the institutions of state have never developed a protective function, different processes come into play. Very few Indonesian citizens are accustomed to placing any dependency on government to assess or manage risk, and as will be demonstrated, they put their trust in institutions other than those associated with government. This is central to how they have responded to the H5N1 virus and to government interventions designed to counter it.

5.2 Living on the volcano

The outline of recent economic and political ruptures given above pales in comparison with those associated with the so-called natural hazards that abound in the territory. Indonesia's 'risk archipelago' is extensive, and what might be called 'forces of nature', often violent,

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[81] See: Transparency International. Available at: http://www.transparency.org/policy_research/surveys_indices/cpi/2010/results [accessed 7 November 2011]

[82] Seventy per cent of the members of parliament were voted out in the 2009 legislative election. Source: 'Indonesian parliament in SBY's second term', Jakarta Post, 24 August 2009

unpredictable and extreme, are never far away in time, or space. A senior civil servant concerned with the H5N1 response said:

> We are criticised for not getting a grip [on avian influenza] in 2005, but what we had to consider then was Aceh and trying to clean up after the [Indian Ocean] tsunami. There were hundreds of thousands of human bodies to deal with. Who was concerned about chickens in those times?[83]

Located on the edges of three tectonic plates, Indonesia encompasses more than 128 active volcanoes. In the 19th century, devastating eruptions at Krakatoa and Tambora sent shock waves round the world, and the EM-DAT database identifies 39 deadly eruptions in the last 100 years.[84] Earthquakes occur more frequently and are less easily predicted. The US Geological Survey (USGS) records seven magnitude 6.0, or higher, earthquakes in Indonesian territory in 2010, and 11 in 2009.[85] In May 2006, a magnitude 6.3 earthquake near Yogyakarta in central Java killed approximately 6,000 people and left 1.5 million homeless, and in May and December in 2005, undersea earthquakes off Java and Sumatra resulted in over 500 and 1,000 deaths respectively. Tropical storms, river flooding (some 30 per cent of the country's 5,000 rivers pass through urban areas) and landslides also regularly cause mortality, whilst eastern regions are drought-prone. Tsunamis are most infamously devastating, however. The Indian Ocean event on 26 December 2004, referred to by the respondent above, killed over 200,000 Indonesians, and six other deadly tsunamis were recorded between 1990 and 2010.[86] The most recent, on 25 October 2010, again off Sumatra, killed over 430 people. My interviews suggest that in tsunami prone areas (such as the southern and western coasts of Banten, on the tip of west Java, or on the western coast of Sumatra) there is now significant concern associated with tsunamis, but volcanoes are revered rather than feared. Responsible for the high fertility of the soil of Java, the peaks of volcanoes in particular are regarded by many as sacred places. Studying three highly volcanic areas on Java – Sumbing/Sindoro, Dieng and Merapi – Lavigne et al. (2008) found only tiny numbers of people even aware of the threat. Nobody in the nearby communities was afraid of volcanic eruption, and in a number of instances, agriculture was actually being expanded upslope into more dangerous areas. Local people, Lavigne et al. concluded, often underestimate the scientifically or statistically estimated risk, and give prominence to whether the volcano can be seen. Around Merapi, one of the most active volcanoes in the world, 97 per cent of those surveyed thought eruptions were an admonition

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[83] Interview, Jakarta, 25 August 2008
[84] Available at: http://www.emdat.be/ [accessed 1 November 2009]
[85] See: http://earthquake.usgs.gov/earthquakes/eqarchives/year/eqstats.php [accessed 29 October 2009]
[86] See: http://www.ngdc.noaa.gov/nndc/struts/form?t=101650&s=70&d=7 [accessed 2 February 2011]

from the supernatural world and did not see death as a negative event. Rather it was a 'regenerative process that should be accepted with human humility' (ibid:280). This is not an understanding that finds much sympathy with contemporary scientists or risk managers.

Indonesia also experiences persistent hazards associated with social unrest and political tension. In the last decade, this has manifested as violent conflict in areas of Aceh, Maluku, Poso, Sambas (West Kalimantan), and elsewhere (Davidson, 2009). In Aceh, war combined with gangsterism, caused an estimated 15,000 deaths between 1975 and 2005 (World Bank, 2005). In East Timor, between 1976 when Indonesia invaded, and 1999 when control was relinquished, between 150,000 and 250,000 people are estimated to have killed in conflict (Staveteig, 2007), and both Aceh and what is now called Timor-Leste are still heavily militarised. Many also still remember the massacres, largely in the heartlands of Java, which followed an attempted coup in September 1965 that saw between 500,000 and one million people murdered as alleged communists or supporters (Cribb, 1990). More recent, religiously motivated incidents have been less deadly, but in September 2010, over 30 churches were violently attacked, and in August 2010, in Bekasi, West Java, 20 people were injured, predominantly female, in an attack on an open air religious service.[87] Terrorism, which in the past has usually been directed at international targets, also occurs. In October 2002, a bombing at a nightclub on Bali killed 202 people, and in 2006, 20 people were killed in three coordinated suicide attacks on the same island. In Jakarta, a car bomb outside the Australian embassy killed nine people and injured over 100 in September 2004, and in July 2009, two suicide bombings in hotel lobbies killed seven people and injured 50.

What are often called accidents also cause a significant death toll. In September 2005, a passenger aircraft crash in Medan killed more than 150. In December 2006, a ferry disaster in the Java Sea caused at least 461 deaths. In January 2007, an aircraft crash off Sulawesi killed all 102 onboard, and three months later another at Yogyakarta killed 22 people.[88] Road transport affects greater numbers of people, and is more dangerous. Road deaths average around 28,000 a year in Indonesia, making it one of the most common causes of death. *Mudik*, the annual end of Ramadan hometown exodus, is particularly dangerous with over 1,000 people, predominantly motorcyclists, dying on the roads in one week in 2010.[89] Yet motorcycles are commonly ridden without helmets (a law requiring them is enforced only in some cities, and

[87] 'FPI Attacks HKBP Church Members in Bekasi', Jakarta Post, 8 August 2010
[88] Danger can arrive even before the flight. In March 2011, two Kuwaiti nationals were detected at Jakarta's airport attempting to smuggle 40 sedated pythons out of the country. Source: Sunday Times (London), 27 March 2011
[89] Jakarta Globe, 14 September 2010

fines connected with any violations are usually collected informally, on the spot) and whole families, including babies, are often to be seen being transported by motorcycle. Motorcycling is of course a voluntary activity, which offers the benefits of affordable transport, thrills if required, and for many, prestige. These benefits clearly outweigh any danger associated with the activity. Similarly, smoking tobacco might be considered a voluntary risk, but it is one that over one half of the adult males in Indonesia are prepared to accept, and the numbers are growing: from 1990 to 1997, a World Bank study indicates that cigarette consumption increased by 39 per cent (Yurekli, 2000). By way of statistical comparison, in the same period, consumption fell in the USA by three per cent. More specifically, in terms of comparison with modernist ideals associated with risk, responsibility and control, it might be noted that the WHO as an employer no longer recruits tobacco users.[90]

In these circumstances it is understandable that an invisible virus that has resulted in only the low hundreds of deaths over nearly ten years does not cause significant concern amongst the Indonesian population. Many Indonesian citizens are facing more immediate and substantial threats from natural hazards, intermittent civil unrest, accidents, and through choice. Modernist notions associated with a benevolent welfare state, a separate and controllable nature, and rationalist risk constructions find little traction. The next section of this chapter considers some of the changes occurring in Indonesia's dynamic new democracy.

Danger and democracy

To an outsider, life might appear remarkably dangerous in Indonesia. People live with children next to unfenced railway tracks, pulling drying clothes and vegetables off the rails minutes before trains pass. In homes, electric switches and sockets pop and spark, water drawn from a tap needs boiling before it can be drunk, and much takeaway food is provided in plastic bags sealed with tiny metal staples. On the roads at night, running lights on vehicles appear to be voluntary, as does any restraint on speed. Adjacent to the roads, where workers are often to be seen painting kerbstones by hand with nothing more than a branch on the road to protect them, the few paved sidewalks that do exist inevitably open unexpectedly into deep drains, and at street corners everywhere, woks containing a gallon of oil boil on gas-fired burners, with petrol being sold nearby by the litre out of glass bottles. The onus appears to be very much on the individual to look after themselves. An indication of this might be drawn from a common farewell between friends: '*hati-hati*' (be careful, watch out). Informal conversations, however, and more formal interviews in which I attempted to elucidate common fears and

[90] See: http://www.who.int/employment/FAQs_smoking_English.pdf [accessed 15 July 2010]

worries usually ended up with two main concerns, which some respondents linked: first, social embarrassment caused by violations of etiquette, and secondly, being alone.

Professional market research in the same area finds that over half the population are most worried about 'not being able to pay for the household's daily expenses', followed by 'the head of household being out of work', 'an increase in criminal activities' and 'social unrest like riots'.[91] Pointing to the low take up of insurance – in 2003, the insurance density was US$15 per capita, and penetration only 1.49 per cent of GDP compared with averages for Asia of $180 and 7.5 per cent, respectively – a survey by Allianz AG, GTZ and UNDP (2006) lists the top five concerns of Indonesian citizens as: (1) serious illness, (2) education of children, (3) poor harvest, (4) death of relatives and (5) social obligations. These results are possibly the consequence of around 40 per cent of the population, some 100 million people, living on the equivalent of US$2 a day, or less (Asian Development Bank, 2008), and find little concurrence with the concerns of those living in highly medicalised, well insured and individualised societies. As will be discussed in the following chapter, poultry disease and mortality are, and always have been, common. It is also the case that H5N1 infection in humans is still rare, and the notion of chickens transmitting a disease to humans does not correspond with the daily experience of the many Indonesians who live with poultry. In these circumstances, and with other pressing matters relating to issues of day-to-day survival, few people are concerned about the probabilistically calculated risks associated with a scientifically defined virus, or any responsibility that government institutions might have for managing them.

This is not to say that Indonesian citizens are unconcerned about danger, or that the situation is unchanging. An unusual set of events emerged in mid-2010 following a series of explosions and fires associated with government-subsidised three-kilogramme Liquified Petroleum Gas (LPG) canisters. Between April and July, Jakarta suffered 15 explosions, which killed ten people and injured 33. Nationwide, the Center for Public Policy Studies (*Puskepi*) announced that 106 explosions had been recorded in 2010 (to August), compared with 61 in 2008, and 50 in 2009. In total, 26 people had been killed and 225 injured across the country.[92] Pressure for action from the government came from many quarters, and this might be considered a move towards a more reflexive modern society. In the countryside, women's groups held 'community elections', which rejected LPG. In central Jakarta, another group staged a lie-in to protest about what had been dubbed the 'Kitchen Bombs', and to allege corruption in the kerosene to gas conversion programme. In another protest in Makassar,

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[91] Roy Morgan Research, for example, reported in Jakarta Post, 9 June 2009
[92] Jakarta Post, 10 August 2010

South Sulawesi, around 100 women presented themselves at the local prison requesting incarceration and shelter from high food prices and 'Kitchen Bombs'. More conventionally, groups like the Indonesian Consumers Foundation (YLKI) pressed the government to take responsibility. Given such an outcry, widely reported in the press and on television, the government had no option but to act. In early July, the President ordered an investigation, and later the same month, the government announced it would subsidise gas hoses and regulators and withdraw nine million 'faulty' canisters. In August teams were formed in two ministries to monitor the situation, promote safe use of LPG, and manage information and communications, and the police were instructed to move against illegal canister manufacturing and refilling operations of which there were suspected to be at least 70 of the former in Jakarta, and an unknown number of the latter.[93]

The case, I suggest, demonstrates the exuberant reflexivity demonstrated by Indonesian citizens in the *Reformasi* era, and provides a powerful contrast to the widespread lack of concern regarding natural hazards, self-imposed risks and H5N1. Vitally, there was an entity, in this case central government, which, as has been discussed, is little trusted, that could be deemed responsible through its provision of subsidised canisters. As in many countries, the government is a popular scapegoat, but as will be discussed in the next chapter, few people in Indonesia are inclined to assign it any responsibility for poultry disease. The 'Kitchen Bomb' case also illustrates the development of a new receptiveness, and reflexivity, among government officials. Given public protest enhanced by mass media, it is now rare for the government not to support the public, even if it means backing down, or abandoning a position. The need for the authority of the president to be directly involved in any incidents of widespread public concern also became evident. The idea of the president as the benevolent father of the national family was a key trope during the period of Suharto's authoritarian rule (Newberry, 2010), and remains powerful today. As will be discussed in chapters 7, 8 and 9, however, H5N1 generates little concern in the countryside, and attention from government officials is almost uniformly unwelcome.

5.3 Material modernity

Having discussed the scale and variety of natural hazards and other dangers in Indonesia, and indicated the contingent circumstances in which responsibility is assigned to the government, the next section of this chapter considers constructions of modernity evident in Indonesia with a view to contrasting them with the Enlightenment-derived constructions discussed in the

[93] Jakarta Post, 29 July 2010

previous chapter, which have been argued to underpin international policy designed to address the global risk constructed around the H5N1 virus. Modernity has many and varied performances in Indonesia today. Some correspond with Enlightenment ideals associated with progress. Aggregation over so large a territory conceals some significant inequalities, but life expectancy, for example, rose from a national average of 41 years in 1960 to nearly 71 in 2008, partly as a result of the infant (under five) mortality rate falling from 218 (per 1,000 live births) in 1960 to 37 in 2009 (World Bank, 2010). Again, the benefits were unevenly spread, but in the 1980s and early and mid-1990s, when Indonesia maintained a real GDP growth rate of over six per cent per year, many in the population felt that their lives were improving as roads and bridges were built, and basic healthcare services spread, despite the corrupt and authoritarian nature of government. Now, with demand for healthcare increasing due to economic growth, urbanisation and ageing, government spending is falling. Spending on primary health care reduced by 25 per cent per capita between 1996/1997 and 1999/2000, and fell a further 38 per cent during the years 2000 - 2004 (Kristiansen and Santoso, 2006:249). Indonesia's health spending is now considered 'low' at US$55 per capita (current international dollars), representing only 2.4 per cent of GDP, and the number of medical doctors to 10,000 people is the lowest in the region at two (WHO, 2007:120).

Today, modernity in the Indonesian context is increasingly constructed in terms of communications technology (Barendregt, 2008). Rafael (2003), among others, has pointed out the paradox that many developing countries continue to suffer poor infrastructure whilst being awash with the latest communication technologies. Young people in particular see mobile phones, motorcycles and mass media as markers of both modernity and progress, and consumption in all categories has been exploding. Data from the International Telecommunications Union suggest that in 2009 there were over 159 million mobile subscribers in Indonesia, up from 47 million in 2005, and 3.7 million in 2000 (International Telecommunications Union, 2011). Ignoring the fact that some people have more than one account, a simple analysis would suggest that nearly 70 per cent of the population now own a mobile phone. The growth of motorcycle sales is similarly dramatic. In 2010, purchases rose 26 per cent on the previous year to total 7,369,249 units, with 513,343 units being sold in December.[94] Until 1998, mass media was kept under strict control by the government. Now there are around 125 television channels, over 1,000 radio stations, in excess of 300 daily, weekly and monthly print publications (Aegis Media, 2009), and with over 31 million users,

[94] Source: Reuters, 18 January 2011. Available at: http://uk.reuters.com/article/2011/01/18/indonesia-economy-motorcycles-idUKL3E9I0BL20110118 [accessed 24 March 2011]

Indonesia is second only to the USA in the numbers of individuals registered to use the online social service Facebook.[95] Yet the maternal mortality ratio stood at 229 deaths per 100,000 live births in 2008, ranking the country 124th globally (Hogan et al., 2010) and currently only 14 universities produce around 200 obstetric and gynaecology specialists each year of which Indonesia currently has only about 1 for every 26,000 inhabitants compared with 1 to 2,000 for the Philippines, for example.[96] This stark contrast bears little correspondence with Enlightenment-derived ideas of progress, or equity, and few determined moves are evident from the government to address the situation.

Town and country

Since independence, government policy has consistently favoured manufacturing over agriculture. This suited the ambitions of the country's leaders towards modernity constructed as national industrial development and economic growth, and provided enhanced opportunities for their own personal gain (Fane and Warr, 2008). With nearly half the working population employed on the land, in 2007, agriculture only contributed seven per cent to GDP growth, and poverty remains overwhelmingly rural (World Bank, 2007:4). The benefits of modernity, therefore, in the shape of economic prosperity and opportunity, can be seen to have accrued overwhelmingly in urban areas, and this is one explanation for the dramatic rise in agrarian protest seen in the *Reformasi* era described by Toer in the quotation at the beginning of this chapter, and in the rapid processes of urbanisation. Nevertheless, the countryside, and the people who live and work there, still have a powerful pull on the national imagination. *Hari Tani* (National Peasants' Day) is celebrated annually on 24 September, this being the date of the promulgation of the Basic Agrarian Law (*Undang-Undang Pokok Agraria*) in 1960, and the concept of the *rakyat* (populace, citizenry) is central to the way many Indonesians understand their nation and its aspirations (Herriman, 2010). National self-sufficiency in rice, which depends on a large agrarian workforce, has always been a powerful and emotional issue (Timmer, 2005), and particularly during the revolution and the Sukarno era, the *rakyat* become idealised as a peasantry romantically linking soil, culture and territory (Kahn, 2003). Anderson (1966:89) describes it as one of the 'keywords born of the revolution'. McVey (1986:40) suggests that 'in modern Indonesian political thought […] the *rakyat* is the ultimate source of legitimacy'.

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[95] Source: www.checkfacebook.com [accessed 10 December 2010]
[96] Source: Jakarta Post, 9 December 2010

Whilst promoting this idea for its own ends, however, the urban elite that led the revolution and took power following independence also assumed colonial notions of the rural population as 'tribal and traditional, a backward Other assumed to be "behind" civilization's curve' (Cadena and Starn, 2007:8; Feith, 1962). Aside from tiny numbers of *ndara* (nobility), historically and today, the Javanese distinguish two social classes: the *wong cilik* (small people), the mass of rural agricultural workers and poor city dwellers, and the *priyayi,* which includes bureaucrats, officials and intellectuals who, essentially, do no physical work (Magnis-Suseno, 1997:15). Legge (1964) suggests that this relationship between the ruled and the rulers is the most significant result of a millennium spent under Hindu-Buddhist cultural development: the people provided tribute, and the court provided protection and stability. Siegel (1998:3) argues that '*rakyat*' has come to mean 'followers of a leader' within the protective context of what are now usually called 'patron-client' relations, and for McVey (1986:36-37), paternalistic programmes of modernisation have been based on a contradictory understanding that the *rakyat* is both *bodoh* (stupid, dumb, dull witted) and also the cornerstone of national aspirations: 'the source of political legitimation and the goal of revolutionary endeavour'. As will be seen in the following chapter, and in chapters 7, 8 and 9, these knowledge-power relationships are now charged and changing, and become highly relevant in the constructions of risk and modernity associated with H5N1 and the centrally led response.

Family values

With modernity a fluid work-in-progress in Indonesia, and with the relationships between citizens and the state (and vice versa) in a similar state of flux, irrespective of location or wealth, many people rely on their own processes and institutions for coping with the inherent and unpredictable dangers of the territory. The most important of these is the family. Adamson (2007:9) summarises the situation when she suggests that Javanese society is hierarchical, discourages individualism, and focuses on values of family and community. An extensive study by Geertz (1961) indicates that the extended family is expected to assist not only members when they are facing a crisis, but also in circumstances that are not emergencies: the education of a promising child, for example. More recently, citing Townsend (1994), who argues that if formal financial and insurance markets are lacking, rural households will make informal arrangements using local institutions to mitigate risks from agricultural uncertainty, Witoelar (2005) analyses detailed data from the Indonesia Family Life Survey indicating that inter-household transactions with relatives or members of the extended

families living in different villages or regions are more important in protecting the household from village-specific economic shocks than arrangements with households within the same village. However, contrary to the common picture of dutiful children supporting elderly parents, Schroder-Butterfill (2004:497) shows that only a minority of older people are reliant on their children or grandchildren and that in the majority of cases, the net flow of support is either from old to young, or balanced: 'Pension and agricultural incomes serve to secure the livelihoods of whole family networks, and the accumulated wealth of older parents is crucial for launching children into economic independence and underwriting their risks'. Frankenberg et al. (2002) concur: not only do over half of the couples surveyed report seeing their parents at least once a week, but transfers of money and time between parents and children and vice versa are a common form of insurance to help each other out in times of need.

Beyond the extended family, a number of other institutions provide forms of insurance. The first is the *arisan*, technically a rotating credit association (Eldridge, 1995; Geertz, 1962) or a 'fixed' lottery, in which an extended family, a group of friends, or a mixture of friends and family, individually contribute a fixed sum of money regularly – weekly or monthly most usually – to a central fund, which is then distributed in whole at fixed intervals to each member of the association in turn, with the winner being removed from future rounds until each member has won. The system can act as a form of insurance in that if one member is the victim of sudden misfortune, or has an urgent need for money, they are allowed to 'win' out of turn. *Arisans* also serve as a form of savings, and have an important social element, primarily for women. Secondly, and more broadly, it is also possible for an individual to turn to the community in which they live for help. Formally, this relationship is expressed in the phase *gotong-royong* (community self-help, mutual cooperation). Founded in the need for the community to work together to maintain the irrigation systems required for wet rice cultivation, the concept now can now encompass such work such as house and road building, and neighbourhood cleaning and gardening. Bowen (1986) argues that the concept has been reworked by the state to become a cultural-ideological instrument for the mobilisation of village labour, but it does create an environment in which members of the same community may approach each other for help and support. Crucially, reciprocity is always involved, together with tightly defined notions of moral obligation. Thirdly, loans from employers are a common means for those in employment to cover emergency, and other, requirements, and fourthly, as a last resort, pawn shops are often used as to translate items such as jewellery into cash. Misfortune is, however, usually treated stoically. Koentjaraningrat (1960:94) suggests a conception that some may still draw on to guide and legitimise action:

> The basic position of their [the Javanese population's] world-view is the conviction that every aspect of the cosmic and social order is predetermined. Individual human beings play a subordinate role in this scheme of things. The major events and reference points in their lives have been fixed and their destiny predetermined. In this framework they must bear the afflictions and distresses of their existence patiently. This links with a belief in supernatural forces. Help is available from the idealized spirits of ancestors, which, like Allah or God transmit religious feelings and a sense of security.

These attitudes stand in stark contrast with the rationalist, modernist principles advocated for dealing with H5N1 exhibited in the globally determined response, according to which, nature is separate and controllable through a combination of human science, technology, determination, and a rational, efficient bureaucracy. The volcanic, earthquake prone ground of Java may have impressed upon its inhabitants how slight and inconsequential human efforts are when faced with such tectonic forces, and generated attitudes associated with inevitability, acceptance and powerlessness. On Java, death by accident, disaster or disease is unremarkable, although it is not a popular subject for speculative conversation. The Allianz AG, GTZ and UNDP study previously mentioned (2006: 54) points to the difficulties this creates when selling life insurance products. As well as widespread scepticism that an insurer will pay out, many feel that purchasing such policies will encourage them to fall ill and die. Discussing the death of a ten-year old child hit by a bus outside his school during my fieldwork, I recorded comments including: 'His time had come,' 'It was Allah's will,' and 'He has gone to a better place'. Amongst a committee of parents and teachers, there was no talk of controlling traffic outside the school, erecting barriers and warning signs, or instituting road safety classes. When it was suggested that a simple barrier would stop children from running straight onto the road, the head teacher said: 'Who would pay for that? Such items are not in my budget. And what is more, it is not on school ground. Who would approve it?'[97] No mention was made of rationalist notions of controllability, prediction, or safety.

5.4 Conclusion

This chapter has contrasted the globalised concerns relating to an influenza pandemic, and the Enlightenment-derived ideals of modernity that drive the risk constructions of the organisations involved in the international H5N1 response, with current cultural and political norms in Indonesia. The objective has been to set the context for the more specific investigations of the following chapters. Constructions of risk and modernity in Indonesia have been shown to vary significantly from those of the international community. In Indonesia,

[97] Interview, Banten, 9 February 2009

uncertainty abounds. Earthquakes, volcanoes and tsunamis, for example, frequently and unpredictably cause catastrophes, and the economic meltdown of 1997-8 is still fresh in many adults' memories. In these circumstances, there is little conception that scientific, technical or administrative expertise can contribute to safety, progress or stability. Cultural forms related to spirits and deities are often called on to provide explanations for calamities, and fate is more commonly invoked in the event of a disaster than a failure of technology or risk management. In Latour's terms, discussed in chapter 2, nature is not purified. The world is rarely seen as bi-polar, divided into separate and independent realms of nature and culture.

Whilst modernity, in the form of economic development, has improved the lives of many, Indonesia's political context has been shown to be diverse, complex and in flux, and as yet unsympathetic to modernist models of legal authority, rationality and bureaucratic efficiency. Attitudes associated with an exploitative colonial period, and the corruption, collusion and nepotism that characterised Suharto's New Order regime linger, and the vast majority of Indonesian citizens are only beginning to regard the state, rather than a local patron or protector, as having any benevolent responsibility for their welfare. Whilst continuing economic growth has brought about a significant increase in material prosperity, and access to mass media, there has not been a corresponding increase in the availability of healthcare services, or roads, for example. In the recent, post-1998, democratic era, citizens' demands and complaints have become more explicit, and transmitted by a lively news media, the government is increasingly prepared to exercise its new found flexibility to their benefit. Fundamentally, however, most Indonesians rely on institutions such as the family for support in calamity, rather than the state. With little trust in expert systems or authoritative institutions to fail, there is little evidence of Beck's risk society. Nor is there much evidence of the idea of a public good, and even less of a global public good. Regional and socially stratified conceptions of common goods exist, but the idea that there is a good of benefit to every human finds little traction. This challenges the moral authority, and imperatives, of the international community.

The following chapter examines how the Indonesian national policy response to H5N1 developed in such a context, and sets this policy against the practices of citizens working with and keeping poultry and other birds.

6. Indonesia: H5N1 policy response and citizen practices

> 'The knowledge that makes a difference in changing the world is knowledge that travels and mobilizes, shifting and creating new forces and agents of history in its path.'
>
> (Tsing, 2005:8)

This chapter continues from the analysis given in chapter 4 of global policy concerning H5N1 and the constructions of risk and modernity that underlie it, and the discussions of chapter 5 concerning the more diverse and fluid constructions of risk and modernity evident in Indonesia. The chapter first outlines the plans that were developed as the substantial element of the H5N1 policy response in Indonesia and, analysing the constructions of risk and modernity that they embody, I argue that they were defined and driven more by international actors than domestic pressure or concern, but found approval amongst a national governing elite motivated by modernity constructed as progress, order and international diplomacy. The chapter continues to examine the main factors that confounded the implementation of a technically defined disease control policy. These include the lack of credibility the government has to make policy in the poultry industry, and the multifarious constructions of risk and modernity evident amongst those that keep and work with poultry. These are shown to be related to the affection the Javanese have for all types of birds, the prevalence of birds, particularly poultry, in everyday life, the importance of poultry as food, and the commercial imperatives existing in the poultry industry and amongst smallholder farmers. Whilst the large corporations concerned with high value processes such as breeding and the production of chicks have modified procedures, on the majority of farms where the birds are grown, and in the markets where they are slaughtered and sold, little has changed, and persistent financial pressures are shown to outweigh any concern over human health risks emanating from poultry. For these groups, significant drops in consumer demand resulting from media reports of avian influenza outbreaks are the biggest risk constructed around the H5N1 virus. Among these groups, distinction is rarely made between diseases caused by H5N1 and those caused by other pathogens. The universalist H5N1 risk constructions of the organisations leading the global response, and their aspirations towards a purified conception of nature, therefore find little correspondence with those of many actors involved with poultry in Indonesia, who, in an environment characterised by widespread scepticism regarding the government's competence and intentions, are more influenced by cultural, commercial and livelihood concerns which lead them to deny or question the existence of the virus.

6.1 Slow off the mark

Highly pathogenic avian influenza (HPAI) is a notifiable disease according to the World Organisation for Animal Health's (OIE) Terrestrial Animal Health Code,[98] but as has been mentioned, the government of Indonesia was slow to declare its presence in the country. A virulent poultry disease, which some veterinarians suspected was H5N1 HPAI, had been detected in Central Java in August and September 2003, and H5N1 was confirmed in Indonesian laboratories in October that year,[99] but the government did not declare publicly until 24 January 2004, following Singapore's and Malaysia's ban on the import of Indonesian poultry products.[100] Allegations accompanied the announcement that the government had delayed making the disease public due to pressure from multinational companies which feared their operations would be disrupted. The then Director-General for the Development of Animal Husbandry in the Ministry of Agriculture said that he believed there was a possibility that the disease was intentionally introduced to Indonesia by foreign parties, but refused to name the suspected country. He played down the risks to humans, explaining that as there were no human casualties, the disease was considered harmless, and the ministry preferred to call it avian influenza rather than bird flu. 'Avian influenza is different from bird flu,' he said. 'That is what experts told me ... We will call the disease "bird flu" if humans are affected'.[101]

Four days after the announcement, on 28 January 2004, Indonesian officials joined those of Cambodia, China, Japan, Republic of Korea, Laos, Malaysia, Singapore, Thailand, the United States, and Viet Nam (with the European Commission observing) in Bangkok, Thailand, for an emergency Association of Southeast Asian Nations (ASEAN) meeting. The concluding statement from this meeting recognised the threat to the poultry industry, and human health, across the region, and called for 'decisive actions', including closer cooperation, monitoring and investigation, and 'the implementation of domestic measures to control avian influenza having regard to the recommendations of the World Organization for Animal Health (OIE), World Health Organization (WHO), and the Food and Agriculture Organization (FAO)'.[102] As discussed in chapter 4 there are clear prescriptions, emanating most significantly from the OIE, for dealing with avian influenza. Grounded in modernist, rationalist, technical principles, these are based on the principle of 'stamping out' and involve mass culls of infected birds, and birds

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[98] See: http://www.oie.int/en/international-standard-setting/terrestrial-code/access-online/?htmfile=chapitre_1.10.4.htm [accessed 19 March 2011]
[99] Interview, Jakarta, 8 February 2010
[100] 'S'pore, KL freeze poultry plans', Jakarta Post, 24 January 2004
[101] Quoted in 'Govt confirms bird flu after long cover-up', Jakarta Post, 26 January 2004
[102] Source: 'Joint Ministerial Statement on the Current Poultry Disease Situation', Bangkok, Thailand, 28 January 2004. Available at http://www.aseansec.org/15977.htm [accessed 15 September 2010]

within 3km of infected areas, together with vaccination, surveillance, and movement controls. Subsequently on 29 January, following pressure from the WHO, the Indonesian Ministry of Agriculture announced that 'selective' culls of infected poultry would take place, and on 1 February ordered the vaccination of healthy chickens, and lifted import restrictions on vaccines.[103] For its part, the Ministry of Health designated the Suliyanti Saroso Hospital for Infectious Diseases in Jakarta (previously a specialist SARS centre) as an H5N1 referral centre, the first of a network of 44 specialist hospitals across the country, stockpiled limited quantities of antiviral medicines, and began some sero-surveillance among poultry workers.[104] The stakes appeared high. On 1 February, two girls had reportedly died following the death of their brother from H5N1 in Viet Nam, and the WHO had announced it suspected the first case of human-to-human transmission.[105] On 3 February, the Minister of Agriculture declared avian influenza a dangerous disease,[106] but days later, only some 2,500 chickens of a planned 216,900 were culled in Bali, with farmers complaining that compensation was not forthcoming or sufficient, and a controversy arose regarding the import and local manufacture of vaccine.[107] From the earliest days in Indonesia, then, it can be seen that politics and other cultural factors challenged the processes of scientific purification that had been central to determining the shape of response. Even with laboratory confirmation of H5N1, pressures from commercial interests meant Indonesia followed China, Viet Nam and Thailand in suppressing and delaying the announcement of infection, and, as will be discussed below, on the ground, rationalist, bio-medical and veterinarian defined responses proved to be challenged by cultural factors. This pattern of government intentions to follow international norms being ignored or subverted on the ground would recur in many areas over the following months and years.

The Indonesian H5N1 policy response is discussed first below, and its links elucidated with international concerns, ambitions and influences. The remainder of the chapter outlines major cultural, social and political factors that challenge this modernist, centralised response. This sets the scene for the more detailed investigations of chapters 7, 8 and 9, which examine specific interventions that were developed as part of the response, and illustrate different dimensions and dynamics of the varying constructions of H5N1 risk and modernity which

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[103] 'Megawati orders selective cull', Jakarta Post, 30 January 2004; 'Govt to allocate Rp 50b to help poultry farmers', Jakarta Post, 2 February 2004

[104] 'Govt finally admits to bird flu dangers', Jakarta Post, 4 February 2004

[105] Source: WHO. Available at: http://www.who.int/csr/don/2004_02_01/en/index.html [accessed 12 October 2011]

[106] Decree No. 96/Kpts/PD.620/2/2004

[107] 'Bird flu feared to have infected ducks in Bali', Jakarta Post, 8 February 2004; 'China vaccine spark controversy', Jakarta Post, 7 February 2004

concern this thesis. Focused on local attempts to restructure commercial poultry supply chains into Jakarta, and change domestic poultry keeping practices there, chapter 7 illustrates the case of H5N1 constructed as a bio-medical health risk, which is deployed in the interests of governmental rationality and ambitions towards order and control. Chapter 8 considers the development of an H5N1 surveillance system, founded on a scientific rationality and deployed through government authority into rural populations keeping domestic poultry. Chapter 9 examines a more variegated and multidimensional 'risk communications' programme, where H5N1 is constructed as a broad public health risk, but which hybridises as it is deployed by non-government agencies into a wide range of groups to incorporate dynamic and plural constructions of risk and modernity.

6.2 International influences

The 2006 National Strategic Plan for Avian Influenza Control and Pandemic Influenza (Republic of Indonesia, 2006), which had been developed primarily to present for funding at the January 2006 Ministerial conference in Beijing,[108] included an animal health component and a human health component, and recognised the fundamental problems associated with the situation in Indonesia:

> The increasingly wide spread of AI is caused by the uncontrolled movement of infected birds, poultry products and wastes, labor and transportation from infected areas to uninfected areas, as well as low animal heath institution capacity and a lack of trained animal healthcare workers (p.5).

The related animal health component, the National Strategic Work Plan for Progressive Control of HPAI in Animals (NSWP) 2006-2008 (Ministry of Agriculture, 2005) had an indicative, and ambitious, budget of US$322,146,000 over three years and consisted of nine elements: campaign management, enhancement of HPAI control in animals, surveillance and epidemiology, laboratory services, animal quarantine, legislation and enforcement, communications, research and development, and industry restructuring. The NSWP was a comprehensive plan to which the FAO in particular had made a large input. An expert meeting in Bangkok, Thailand, between 21 and 23 July 2004, which included the FAO, OIE and other technical institutions, had prepared guiding principles for the region covering surveillance, vaccination, diagnostic services, movement controls, bio-security and other control strategies, which were developed in a Position Paper which was published in September that year (FAO,

[108] International Pledging Conference on Avian and Human Influenza, Beijing, 17 - 18 January 2006

2004). This, and subsequent FAO meetings, analysis and inputs, proved to be fundamental to the shape and direction of the response in Indonesia.[109] One interviewee said:

> The NSWP was drawn up almost entirely by international consultants, some of whom did not have much idea about conditions in the country. It was a good plan judged by international standards and norms, and was cheerfully signed off by the Ministry of Agriculture, [which] imagined a deluge of money coming [its] way, but with the experience we have now, one has to wonder how appropriate it was for Indonesia.[110]

Another interviewee suggested:

> It is all very well for UN organisations to provide high level technical advice, but the UN is not ultimately solution-driven. The focus of the response is very, very scientific and this does not fit the local context well. The science is important but it is not a solution on its own. The government has to drive the solution, with UN, and other international agencies, facilitating. That is clearly not happening here.[111]

No lesser authority than the President (whose PhD is in agricultural economics), however, needed a plan. Speaking by video link to the sixth annual conference of the World Bank's Parliamentary Network in Helsinki, Finland, on 23 October 2005, he said:

> The imperative is clear. All our development calculations and projections would be ruined, if humanity were to experience an avian flu, human influenza, pandemic... The impact of a new pandemic on the economies of the world would be totally disastrous [...] That is why we must all be on the high alert.[112]

With global concern running at a similarly high pitch, he and the country were the focus of high level diplomatic attention. The EU health commissioner, Markos Kyprianou, visited Indonesia in mid-November, arguing forcefully for a response based on technical veterinary norms: 'You eradicate, you cull, vaccinate, and compensate,' he is reported to have said.[113] A week later, on the sidelines of an Asia Pacific Economic Cooperation (APEC) summit in South Korea, both US President Bush and Russian President Putin reportedly impressed the need to contain the avian influenza outbreak on President Yudhoyono.[114] With technical capacity scarce within the country, and a range of well-qualified international agencies lined up to provide it, a comprehensive plan must have appeared attractive to the President and his ministers, especially as it appeared that funding to develop and implement it would follow naturally. On 1 November 2005, President Bush, speaking at the US National Institute of Health, had urged

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[109] See for example: 'Planning for Accelerated control of H5N1 Highly Pathogenic Avian Influenza in the Indonesian Archipelago', FAO, June 2007
[110] Interview, Jakarta, 13 August 2008
[111] Interview, Jakarta, 28 August 2008
[112] Quoted at: http://www.fao.org/docs/eims/upload//221473/national_plan_ai_idn_en.pdf [accessed 12 December 2010]
[113] 'Public health must come first, says EU official', Jakarta Post, 17 November 2005
[114] 'Susilo talks defense with Bush, Putin', Jakarta Post, 21 November 2005

Congress to let him use US$7.1 billion of the federal budget to combat avian influenza.[115] On 5 November, World Bank President Paul Wolfowitz reportedly telephoned President Yudhoyono to offer the country immediate financial support towards culling,[116] and a few days later the EU announced a planned grant of Euro30 million (then US$35.5 million) for a number of Asian countries, including Indonesia.[117] Also, as discussed in chapter 4, the Beijing Ministerial conference, offering the possibility of further funding opportunities, was in many diaries for January 2006. An interviewee summed the situation up:

> It's quite conceivable that the [agriculture] minister and his staff knew how difficult it would be to mount any effective response, what with millions of chickens running around everywhere, decentralisation, the vested interests of the big feed companies and so on. They also knew that any response that hit the poor in the countryside would be politically unwelcome. So why not let the UN create a grand plan, which the World Bank and the EU would pay for? If it didn't work out, they could throw their hands up and say "not my idea"; and if there's an iota of success, they could take the credit.[118]

In June 2008, proposals were published for a second phase of the NSWP (Ministry of Agriculture, 2008). Regarding the original 2006 plan, it admitted that '… the experience is that, though technically sound, the plan was overly ambitious for the level of commitment to implementation shown by the stakeholders. It was never implemented' (p.12). The new plan, however, retained the nine elements of the original plan as a conceptual framework, with only minor changes. These included extending the surveillance programme into broader community based animal disease prevention and control programmes, focusing activities on high density poultry production zones, building public-private partnerships to promote and coordinate industry led initiatives that would extend beyond farms into the market chain, and encouraging local governments to accept increased financial responsibility for avian influenza control programmes. These changes in focus were driven by a number of factors. First, culling had proved difficult to implement. Even if money for compensation was available at the local level, disbursing relatively small sums equitably to the many thousands of farmers and smallholders affected transpired to be beyond the capability of the authorities concerned. Secondly, vaccination, a familiar procedure in the industrial sector, proved impractical for free-ranging poultry in village settings (Thornton, 2007). A cold chain is required for the vaccine, each bird needs five or six injections over a year, and owners can be suspicious as birds sometimes die after vaccination. Thirdly, questions had started to emerge regarding the

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[115] 'Politics could impede govt response to bird flu', Jakarta Post, 21 November 2005
[116] 'WB offers RI funds for bird flu fight', Jakarta Post, 9 November 2005
[117] 'EU official to visit RI to discuss bird flu', Jakarta Post, 14 November 2005
[118] Interview, Jakarta, 16 September 2009

emphasis on interventions among backyard poultry. In May 2007, for example, an internal review of FAO data found a negative correlation between reported human H5N1 case rates and native chicken density, a result which concurred with that of Otte et al. (2007) in Thailand (FAO, 2009a:27). Fourthly, the enrolment of many regional animal health organisations had proved difficult, especially in the context of decentralisation and historical interventions in the poultry industry by central government.

The response in Indonesia can therefore be seen to be based on the rationalist, technical norms of the international community, which were discussed in chapter 4. These appear to have been imported wholesale into the country through collaboration between international scientists and animal health specialists, and their national Indonesian counterparts. These plans appeared attractive to the country's political leaders, an elite with modernist ambitions towards progress and order, who were keen to ally themselves with international norms and standards, especially in circumstances where the funding to implement moves towards them appeared readily available. As will be demonstrated below, the relatively purified conception of nature underlying response planning, that defines the problem as a matter of the detection and eradication of a specific, scientifically defined virus, makes very few concessions to Indonesia's complex political and cultural context, and the hybrid issues mixing politics, power and culture evident in the poultry industry and poultry farming. Next, the unfortunate history of government intervention in the poultry sector is outlined, and an indication given of the reasons for the consequent widespread scepticism regarding the abilities and intentions of government to determine and implement rationalist policies.

6.3 The weight of history

Beyond the scepticism discussed in chapter 5 that most Indonesian citizens demonstrate for government generally, small poultry farmers in particular have experience of a catalogue of misguided government interventions dating back over 40 years. Yusdja et al. (2004) list a series of failures beginning in the early 1970s, when the government attempted to attract foreign investment into the poultry industry with the objectives of accessing foreign technology, and increasing rural employment and incomes. However, as Japanese, US and Thai companies, bolstered by tariff-free imports of feed raw ingredients, established feed production enterprises and hatcheries, small-scale indigenous businesses suffered, and then as the feed companies began large-scale farming operations, small-scale farmers were again badly affected. Subsequently, in 1981, with a view to protecting rural employment, the government

restricted layer chicken businesses to no more than 5,000 birds and broiler businesses to 750 birds per cycle. The result however was that large companies divided their operations into smaller units, and despite an extension programme, *Bimas Ayam* ('Guidance Chicken') aimed at small farmers, US$50 million credit, and the involvement of BULOG (the national logistics agency) in setting prices, such small-scale farms proved economically unviable and many failed. In 1984, the government then attempted to reform the poultry industry in the shape of PIR (*Perkebunan Inti Rakyat*), the nucleus-plasma (*inti-plasma*) form discussed below, which is still prevalent today. The objective was to support both large-scale and small-scale operations, but this too proved unsustainable and many small farmers went out of business (Rusastra et al., 1988). From 1989 to 1996, the industry grew rapidly without any government control. BULOG legalised monopolist imports of feed raw materials and subsequently three large companies came to control feed and day old chick (DOC) supplies. In 1990, new regulations lifted licensing requirements on farms with less than 15,000 birds, set new licensing regulations on large farms, and required those backed by foreign investment to export at least 65 per cent of production. Big businesses, however, again took advantage by dividing their operations into smaller units, and again in 1996, the threat of bankruptcy was hanging over thousands of small broiler farms (Yusdja, 1996).

Following the 1997 Asian economic crisis, meat demand dropped catastrophically, a massive exchange rate increase[119] affected import prices for feed raw materials, DOC, and veterinary pharmaceuticals, and poultry production declined by 50 to 60 per cent. In 2000, the 1990 regulations were revoked and the fragility of the industry was recognised along with the fact that 30 years of government intervention had not only expensively failed, but had also contributed to the formation of monopolistic/oligopolistic market structures for feed and DOCs, whilst simultaneously fragmenting the production system into countless relatively small units. Since 2003, the industry has grown rapidly under the control of unregulated large-scale oligopolistic companies, and the case for government to set policies is at 'stalemate'.

It should be noted that much of this history relates to the period of Suharto's presidency, and its combination of rationalist, centralising, *pembangunan* development plans for the nation, and the corrupt enrichment of the presidential family and its supporters, which were discussed in chapter 5.[120] With corporate structures extending to the British Virgin Islands, details are hard to come by today, but Ometraco and the Bimantara Group,

[119] From Rp2,000 to Rp15,000 to US$1 approximately.
[120] Suharto actually styled himself as '*Bapak Pembanguan*' – the father of development.

conglomerates closely linked with Bambang Trihatmodjo,[121] Suharto's second son, were prime movers in the industrialisation of the feed sector in the 1970s and 1980s, and PT Japfa Comfeed, which is discussed below, still forms the basis of the Ometraco 'empire' (Indonesian Business Data Centre, 1989:A47 & A481).[122] Similarly Probosutedjo, Suharto's half-brother, who has been the focus of corruption allegations since the 1970s (McDonald, 1980:10), was also involved in the poultry business at that time.[123]

This sets a challenging context for any agency attempting to implement a plan based on rationalist principles. Just as the international agencies adopted a modernist conception of the virus as a part of a separate and ultimately controllable nature, a similarly modernist notion was assumed of an effective and efficient Weberian bureaucracy that operated to the benefit of citizens. The Indonesian case has been shown to be at odds with that position. In the poultry industry, as in many areas of business in Indonesia, the government is widely believed to be motivated by motives ulterior to the well-being of the population.

The chapter next considers longer standing cultural matters, which similarly confound rationalist, modernist conceptions underlying the H5N1 response.

6.4 Inveterate aviculturalists

Morrison (1980:108) suggests that the modern inhabitants of Java are 'inveterate aviculturalists', and that keeping birds at home has a history 'lost in time'. As well as chickens in the yard (and often quail, with ducks and geese nearby), many households keep doves and pigeons (*Columbiformes*), and song or perching birds (*Passeriformes*) in cages hung from porches or verandas. The Zebra or Peaceful Dove (*Geopelia striata*) is particularly appreciated for its looks, and the Orange-headed Thrush (*Zoothera citrina*) for its song. An interviewee said: 'I am lucky enough to have a house and a garden. The garden is a hobby – I work there every day – and the birds go with the garden. Without the birds singing, something is missing'.[124] Over the last 30 years, songbird competitions have become popular and over 75,000 people are now estimated to be involved, predominantly on Java. So-called '*Kicau-mania*' (chirp, twitter, warble-mania), concerns not just the aesthetics of the song, but also posture, and gambling is often involved. Prizes at the national contests range from Rp5 million

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[121] Listed by Forbes in 2007 as Indonesia's 33rd richest person. See: http://www.forbes.com/lists/2007/80/07indonesia_Bambang-Trihatmodjo_HUJF.html [accessed 4 August 2010]

[122] See also: Globe Asia, August 2010 p.102

[123] Probosutedjo and was tried and convicted for the theft of US$10 million from the state in 2003 and was sentenced to four years in prison.

[124] Interview, Majalengka,16 August 2008

to Rp40 million (approximately US$500 – US$4,000), and a winning bird can become worth as much as Rp250 million (US$25,000) (Jepson, 2008). Pigeon racing is also popular. Competitions, which also usually involve gambling, include height challenges, long distance races and sprints, with ties decided by the elegance of the landing.[125] Cockfighting, once a popular gambling pastime, is now illegal, but still occurs secretly. *Ayam Bangkok* (fighting cocks) are still prized possessions, however, and are shown in competitions and can be very valuable. 'They are washed everyday and looked after better than a motorcycle,' observed a respondent.[126] The trade in birds is also extensive. Jakarta's *Pasar Burung Pramuka* (Pramuka bird market) is reputed to be the largest of its kind in south-east Asia, and practically every town on Java has a bird market. Concerning just protected animals, Ulfah (2008:228) found 41 species being illegally traded in domestic markets in and around Bogor, West Java, including 25 species of birds. It is not just in the H5N1 response that the government finds doubt thrown on its competence.

One Javanese ideal sees an adult man possessing a house and a wife, representing security and fulfilment; a dagger, representing status and power; a horse, representing ease of communication; and a bird, representing all of nature, which gives meaning to the rest (Mason, 1992). Schoolbooks from the 1980s show a more modern ideal in a line illustration of a man and a woman with two children, standing in front of a house with a fishpond and a small flock of chickens. As in many societies, the cock stands as a powerful symbol for masculine principles, including supremacy, courage and vigilance, and the hen stands for feminine principles such as procreation, providence and maternal care. In Indonesian *jago* (cock, rooster) is often used to describe a leader or a champion, and the cock and the hen are easily portrayed as 'the bridal couple', or similar, in the jokes that abound about the 'magic' that makes eggs. Banks also have used chickens as a symbol for thrift and savings. An exhaustive survey for this study of 24 contemporary art auctions held in Jakarta between 11 January and 6 December 2009 by Treasures Fine Art (PT Dwi Samapersada) found that in 4,764 lots, 289 represented animals of which 124 represented birds, including 64 chickens. No other animal was represented so frequently.[127]

Few keepers of caged birds are concerned about H5N1. The respondent with the garden above said: 'My birds live in cages high up. They only come out into my hands when I

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[125] 'Lovebirds: Pigeons never waver', Jakarta Post, 13 June 2009
[126] Interview, Majalengka, 17 October 2009
[127] By way of comparison, cats appeared 12 times, pigs 8 times, goats 3 times, and elephants, deer, guinea pigs, turtles, mice, monkeys, whales and butterflies once each.

wash them in the mornings. Their feet never touch the floor. They have no visitors. How are they going to catch any disease?'

For many Indonesians, especially on Java, birds of all sorts, but particularly poultry, are a matter of everyday life. Beyond that, there is considerable affection for birds, and their symbolic links with a profligate and fecund nature, as well as with notions of prosperity and beauty, challenge technically driven risk constructions that determine them to be carriers of a disease that is potentially deadly to humans. Matters are clearly not as simple as the scientists, with their ambitions towards a purified nature, would wish. A senior Indonesian civil servant, involved in the H5N1 response said:

> How would you English feel if your pet dogs and cats were determined to be diseased and dangerous to humans, even potentially? There would be protests. There would be dissent. There is emotion with such things. [...] In some cases you can even talk about love.[128]

These are matters that find little consideration in the understandings or prescriptions of a modern, and modernising, science. Again culture can be seen to be significantly at play, confounding the purity of rationalist, reductive approach. The next section considers poultry as food, where even deeper feelings are in action.

6.5 Consumption and consumers

As noted in chapter 4, processes of urbanisation have been among the most dramatic performances of modernity in Indonesia in the last 40 years. The Indonesian experience fits the common pattern of rising incomes and urbanisation leading to increased consumption of animal protein, and the production of poultry has been rising faster than that of other meat. Between 1995 and 2007 national poultry meat production increased at 3.7 per cent annually from 876,000 tonnes to 1,356,000 tonnes, and eggs at 4.8 per cent annually from 736,000 tonnes to 1,298,000 tonnes (FAO, 2009b:126 & 130). As Indonesian consumers prefer relatively small birds with a live weight of around 1.5kg, this would suggest an aggregate consumption of around 5.7kg, or nearly four birds per person per year in 2007. In 2007, USDA suggests that national consumption was around 3.7kg per head (USDA, 2007:5). Obviously, these aggregate figures conceal inequalities of consumption in wealthier urban areas, but they are regarded as very low compared to neighbouring Malaysia, with a similar diet and culture,

[128] Interview, Batam, 20 April 2009

which currently consumes around 34kg per head annually.[129] The capital Jakarta, for example, with a population of around 12 million, is estimated to consume over a million birds a day.[130]

Women usually provision the household, shopping early in the morning at more than 13,000 wet markets across the country (Sumiarto and Arifin, 2008:21). Birds may be purchased as ready butchered meat, or live for slaughter and butchering on the spot, or later. In urban areas, fresh butchered meat is also available on hand carts which are pushed around residential areas, and fresh, frozen and cooked poultry is also available in supermarkets. In towns there is significant consumption of cooked chicken through restaurants, food stalls and take away outlets. At all locations a distinction is made between *ayam kampung* (village chicken) and *ayam broiler* (broiler chicken). The former, which are grown free-range from local stock, are considered to yield better tasting and more nutritious meat than the latter, intensively raised animals, and cost approximately double (typically Rp30,000 per kg). For many consumers, *halal* slaughter is important, in which the most important element is that the animal is bled to death through a cut in its neck. Ideally a bird is purchased live and slaughtered on the spot, or at home. This may be particularly important for a celebratory meal. Supermarkets are not often trusted, especially as suppliers of frozen meat, which many people think have been injected with water, or are birds that did not sell when fresh. A common fear is buying meat referred to as '*mati kemarin*' (literally, 'dead yesterday') or '*duren*' in Javanese.

On a small number of occasions, consumption of chicken dropped significantly as a consequence of H5N1. Restaurant sales held up better, but many consumers temporarily stopped buying chicken meat for consumption at home. The first event, which followed the government's official announcement of H5N1 infection on 25 January 2004, was the most dramatic. In Jakarta, chicken sales halved within days.[131]

An industry analyst paints a vivid picture:

> The first price drop was the most catastrophic. It was like there was a ring around the city [Jakarta]. They [the traders] refused to take more because there were so many birds in the city that could not be sold. This backed up right to the farm gate. There is no cold storage. This was a shock that has not been forgotten.[132]

The second event followed the government's announcement of confirmation of the country's first H5N1 related human deaths on 20 July 2005. Again within days, poultry suppliers were reporting a plunge in demand of up to 65 per cent, market trade had slowed, and

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[129] Source: Kompas, 13 February 2010. Available at: http://bisniskeuangan.kompas.com/read/2009/02/16/07205589/Charoen.Pokphand.Indonesia:..quot.An.Integrated.Poultry.Related.Company.quot [accessed 20 April 2010]

[130] Interview, Jakarta, 8 and 13 February 2010

[131] 'Chicken sales drop 50 percent', Jakarta Post, 29 January 2004

[132] Interview, Jakarta, 16 September 2009

restauranteurs were complaining that people were 'afraid to eat chicken' and closing early.[133] In Tangerang, the area where the cases had occurred, a 'red zone' had been declared, and within it poultry (and pig) breeders reported sales dropping to zero. In one weekend, poultry consumption fell by up to 70 per cent across the city.[134] Similar, more localised effects occurred in January 2007, after four people died with confirmed H5N1 infections in one week in Jakarta, with poultry vendors saying that sales had halved 'since bird flu hit the headlines again',[135] and in August 2007 on Bali, following two human deaths in two weeks which led to local regulations isolating Jembrana regency, and restaurants and large resort hotels removing chicken from their menus.[136]

These consumer led shocks however only lasted a few days.[137] In June 2009, at a fully functioning market in Jakarta, a woman buying slaughtered and butchered meat for her household's consumption said: 'I see the market workers and if they look healthy I do not worry. If the chicken was dangerous, they would get ill first'.[138] A man buying six slaughtered but unbutchered birds at the same market for his roadside chicken *sate* (skewered and barbequed meat) stall said: 'I always buy from the same trader so I have confidence'. At the heart of this urban market, neither respondent had seen the meat they had bought alive, although it had arrived at the market in such a state a few hours earlier, in a crate on the back of a small truck. Neither respondent volunteered any memory of the January 2004 or July 2005 events when prompted. Both said that they had heard of *flu burung* (bird flu) on the television news, and that they knew it could be deadly for humans; but both stressed that they did not feel in danger, and that the market area we were in was unaffected. 'If we cook the meat properly, we will be fine,' the *sate* stall holder said. 'If it is not cooked, it will not sell'.

At the edges of Jakarta, and in smaller towns, at specialised poultry markets, and at more general markets, the purchase of live birds is more evident. In a market near Solo (Surakarta), Central Java, consumers could be seen carefully inspecting birds' anuses, beaks and eyes for any discharge, before purchase, as well as for broken bones and general alertness.[139] Some vendors linked health to energy as they demonstrated small flocks rushing around their stalls. In Majalengka's general market, standing among rice fields some three

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[133] 'Chicken restaurants, vendors see sales drop', Jakarta Post, 28 July 2005
[134] 'Breeders hit hard by collapsing poultry sales', Jakarta Post, 2 August 2005
[135] 'Chicken sellers report sales slump', Jakarta Post, 17 January 2007
[136] 'Bali farmers start to feel the pinch of bird flu fight', Jakarta Post, 22 August 2007; 'Bali restaurants pluck chicken from menus', Jakarta Post, 24 August 2007
[137] 'Poultry farmer optimistic despite bird flu fiasco', Jakarta Post, 31 January 2004; 'Chicken sales up despite scare', Jakarta Post, 8 August 2005
[138] Interviews, Pasar Ruput, Jakarta, 9 June 2009
[139] Solo, 11 August 2009

kilometres east of the town centre, a female customer at a poultry stall said: 'I have been shopping here for five years and we have never had the bird flu virus. I know this because the people are all healthy'.[140]

From a bio-scientific, epidemiological perspective, the significant drops in consumer demand that resulted from widely reported government announcements concerning H5N1, and human fatalities associated with the virus, are irrational. Even the most virulent influenza viruses are not transmitted to humans through food. The presence of live, or undressed, birds in the supply chain does increase the probability that the virus will be moved from place to place, thus spreading the disease, and handling such birds rather than plucked carcasses may bring human consumers in closer proximity to the virus, but the virus is destroyed by heat, and few who assume the responsibility of cooking chicken in Indonesia neglect to cook it well. Given the ritual, even nationalistic, associations of some foods, coupled with an analysis that sees eating as a process of incorporating and internalising external nature (Hinchliffe and Woodward, 2004:134-135), it is not surprising that Indonesian consumers, especially in urban areas, reacted dramatically. The consumer-led shocks, however, lasted only a few days. Everyday experience quickly worked against any danger being constructed around chicken meat as food in urban areas, just as few in the countryside construct any risk around live chickens. The situation that resulted was effectively an inversion of many other 'scares' associated with food, such as BSE in the UK in the 1980s and 1990s, for example, which are often discussed in the context of increased public worry and failing public trust in expert institutions that are central to Beck's 'Risk Society' thesis. In that case, a sceptical and nervous public received widespread reassurance from government scientists and officials that British beef was safe to eat. In the case of Indonesia, with the exception of the small number of brief events described above, the response to H5N1 most significantly involved a largely unworried public being presented with exhortations from government and scientific authorities to be concerned. Again, 'irrational' cultural and social matters are shown to confound the modernist insistent on rationality and the purity of science in responding to the virus. The next section of this chapter considers the commercial pressures bearing on the Indonesian poultry industry, and shows how they too complicate the ideals of a purified, scientifically driven response.

6.6 Big business

Many different practices on many different scales are involved in poultry farming in Indonesia. These range from technically orientated, industrialised operations to subsistence scale and

[140] Interview, Majalengka, 18 August 2008

hobby activities. The former are exclusively involved in the intensive production of highly bred broilers, and the latter usually involve the production of free-range *ayam kampung*, although some *ayam kampung* are produced semi-intensively. In all, these activities add up to the cultivation of a very large number of birds. Extrapolating from 1997 numbers (the last year for which aggregate figures are available), Simmons (2006:437) calculates a standing national poultry population of just under two billion, divided into 68 per cent broilers, 22 per cent native chickens, seven per cent layers, and two per cent ducks. The total population of village chickens in Java is estimated to be 106 million birds, which are reared by 60-70 per cent of Java's population of 135 million (Sumiarto and Arifin 2008:13).

As is the case elsewhere in the world, it is appropriate to divide industrial activities into sectors that operate 'upstream' and 'downstream' from the farm. The upstream sector includes: (a) breeding and day old chick (DOC) production; (b) feed production; (c) veterinary medicine production; and (d) specialist manufacturing, such as ventilation and feed and drink equipment. The downstream sector includes: (a) transport and distribution; (b) slaughtering and processing; and (c) marketing. Around ten conglomerate companies dominate production in Indonesia, with three responsible for 70 per cent of the market: Charoen Pokphand Indonesia, Japfa Comfeed, and Sierad Produce (Sumiarto and Arifin 2008:10). The largest of these 'integrators' focus on feed and DOC production and distribution over farming, and are sometimes involved in pharmaceutical supply and in downstream slaughtering, processing and packaging activities. As feed accounts for over 70 per cent of the total production cost of broiler farming, and DOC for over 15 per cent,[141] this is where the most significant and dependable revenue opportunities lie, and vertical integration and economies of scale offer competitive advantages in the production of both. Table 2, below, shows the dominance of the top three groups. Feed and DOC production also require significant capital expenditure and technical expertise. Quality DOC are fundamental to a good harvest, and the quality of the feed is closely related to the crucial Feed Conversion Ratio, i.e. how much feed is required to add a set weight of meat to a bird.

[141] An interviewee said he had conducted a study breaking production costs down as follows: feed 76.3 per cent; DOC 18.5 per cent; medications 1.5 per cent; security and accommodation 1.0 per cent; heating 1.0 per cent; and labour 1.7 per cent. Yogyakarta, 25 October 2009.

Table 2: Indonesia poultry feed production 2009.

Rank	Producer	Production capacity (tonnes)	National market share
1	Charoen Pokphand	2,700,000	35%
2	Japfa Comfeed	1,700,000	20%
3	Sierad Produce	700,000	15%
4	Cheil Jedang Feed 'Samsung' Group	600,000	10%
5	Wonokoyo	580,000	10%
6	Others	400,000	10%
Total		6,680,000	100%

Source: *Globe Asia*, August 2010 p.65

For historical reasons, most largely associated with unfortunate government intervention in the poultry industry, as discussed earlier in this chapter, a style of contract farming (*inti-plasma*) dominates, with many integrators providing farmers with DOC, feed, pharmaceuticals and technical support for the 28 – 35 day growing period, and a fixed price for full grown birds at the end of it. Approximately 90 per cent of this contracted production is moved directly to local markets for slaughtering and sale, and the remaining 10 per cent passes through more industrialised slaughterhouses and processing plants. The latter product generally sells to restaurants, supermarkets and food processors with some conglomerates offering their own branded products in supermarkets (Charoen Pokphand's 'Fiesta' brand, for example). So-called 'independent' farmers may produce broilers outside the contract system, procuring DOC, feed and pharmaceuticals themselves, and dealing directly with the market supply chains. As has been discussed, demand for meat has been increasing rapidly, and national broiler DOC production has increased almost tenfold in the last decade, and rose by 6.4 per cent from 1.08 billion birds in 2008 to 1.14 billion birds in 2009. Broiler meat production also increased by five per cent from 1.02 million tonnes in 2008 to 1.08 million tonnes in 2009, and layer DOC production by 30 per cent from 60 million birds in 2008 to 78 million birds in 2009.[142]

The two largest conglomerates, producing approximately 55 per cent of Indonesia's poultry feed, are part of complex transnational business groups. PT Charoen Pokphand Indonesia (CPI) is part of the Charoen Pokphand Group, the largest business conglomerate in Thailand, which is privately owned by Jiaravanon family. Operating in Cambodia, China, India, Malaysia, Myanmar, Singapore, Turkey, Taiwan and Viet Nam, as well as Indonesia, the group

[142] Source: PT Japfa Comfeed Annual Report, 2009 p.32

is primarily involved in agribusiness and telecommunications. CPI was first licensed in Indonesia in 1972 through the Foreign Capital Investment facility to establish a poultry feed factory on 2.4 hectares of land in Jakarta, and is now Indonesia's largest producer of poultry feed, DOC and processed chickens. With 2009 revenue equivalent to US$1.6 billion, it is ranked as Indonesia's 19th largest corporation and third largest agribusiness group.[143] In 2009, the sale of poultry feed accounted for 76 per cent of turnover and the sale of 564 million DOC for 15 per cent. With sales falling at two sister companies – PT Central Proteinaprima Tbk (CP Prima), the world's biggest integrated shrimp company (with 35 per cent of global market share), and PT Bisi International Tbk, a seed producer – CPI dominated revenue production for the group in Indonesia. The directors report 2009 as 'by any measure… a fantastic year'.[144] A summary of financial highlights for the main integrated groups is presented in Table 3, below.

Table 3: Indonesia poultry industry summary financial results 2009.

	2009 revenue (US$)	2009 profit (US$)	Profit 2008 - 2009	Notes
CPI	1.6 billion	161 million	+ 535%	2008-9: revenue +9.4%; operating income +115%.
Japfa	1.45 billion	81.4 million	+167%	2008-9: revenue +13%; operating income +97%. Share price: Jan 2009 - Rp390; Dec 2009 - Rp1,400.
Sierad	356 million	3.7 million	+37%	

Sources: (1) Charoen Pokphand Indonesia Annual Report 2009 (2) Japfa Comfeed Annual Report 2009 (3) Sierad Produce (4) Globe Asia, August 2010.[145]

PT Japfa Comfeed (Japfa) also has transnational roots, established through the Foreign Capital Investment facility in 1971 under the name PT Java Pelletizing Factory as a 50 - 50 venture between PT Perusahaan Dagang & Industri Ometraco, and International Graanhandel Thegra NV of the Netherlands, and the bulk of its shares are still held offshore.[146] The company

[143] Source: Globe Asia, August 2010 p.102

[144] Source: PT Charoen Pokphand Indonesia Annual Report 2009 p.9

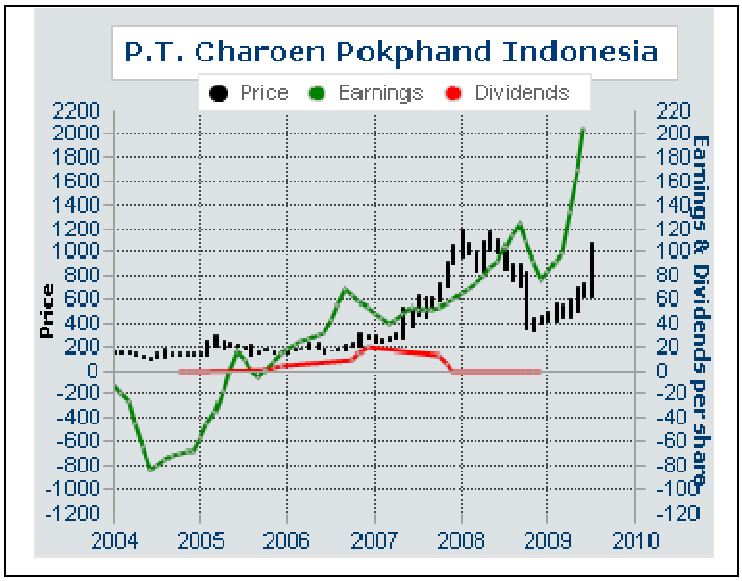
[145] Sources: (1) Available at: http://cp.co.id/wp-content/uploads/2010/05/annual-report-cpin-2009-english.pdf. (2) Available at: http://www.japfacomfeed.co.id/profile/annualreport/japfa/arjci2009.pdf. (3) Available at: http://www.sieradproduce.com/EN/investor/Pages/FinancialHighlight.aspx. [All accessed 29-30 August 2010]
As noted above: currency conversions at Rp10,000/US$1; rates varied from Rp 11,980/US$1 in January 2009 to Rp9,400/US$1 in December 2009.

[146] In 2007 institutional shareholders included Pacific Focus Enterprise Ltd (29.88 per cent) and Rangi Management Ltd (9.57 per cent), both registered in the British Virgin Islands, Coutts Bank von Ernst Ltd

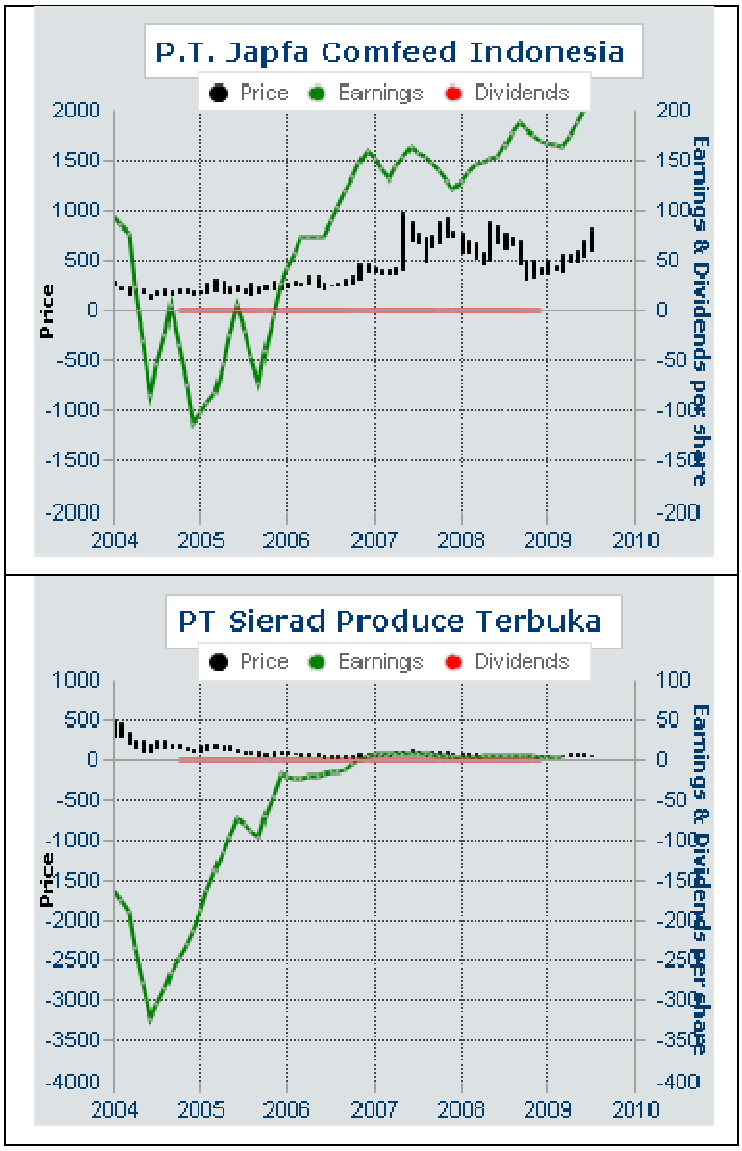
established operations in India in 1995, and sold its business in Vietnam in 2007, where it had become the country's second largest broiler and layer producer. In Indonesia, it is the second largest poultry integrator, with a 2009 revenue equivalent to US$1.45 billion. *Globe Asia* ranks its parent Ometraco Group as the 20th largest corporation in Indonesia, and the fourth largest agribusiness group. Like CPI, Japfa is also involved in aquaculture and has interests in beef cattle, and in September 2008, it acquired PT Vaksindo Satwa Nusantara, one of only three companies in Indonesia equipped to undertake laboratory research on H5N1. It too reported a bonanza year in 2009 (see table 3, above), and plans to increase DOC production from 400 million to 480 million birds per year in Indonesia, as well as open new feed mills in India and Indonesia. The third largest integrator, PT Sierad Produce is a smaller, domestically owned entity, which dates back to 1985, but was formed from a merger in 2001 of four companies conducting the core business of the Sierad Group.

Figure 6, below, shows how the earnings of all three corporations were temporarily affected by consumer behaviour as a result of the government's announcement of H5N1 infection in early 2004, and to a lesser degree as a result of the first human H5N1 deaths in mid 2005. Since then, however, earnings have grown strongly.

Figure 6: Share price, earnings and dividends 2004 - 2009 for PT Charoen Pokphand Indonesia, PT Japfa Comfeed Indonesia, PT Sierad Produce.



(9.8 per cent), JP Morgan Chase Bank (8.15 per cent), BNP Paribas Private Bank, Singapore (6.7 per cent), with the public holding the remaining 35.9 per cent of stock (Indonesia Capital Market Directory, 2007).



Source: http://www.corporateinformation.com (A Wright Investors' Service).[147]

Largely as a result of these 'consumer shocks', the prevalence and persistence of avian influenza has always been played down in public by the large corporations, or denied, whilst at the same time they have introduced enhanced bio-security regimes to protect their valuable – and vulnerable – DOC breeding operations. Early reactions to the outbreak from the corporations, generally critical of the government's response, were voiced indirectly through industry groups such as the Indonesian Poultry Breeders Association.[148] One executive, who was interviewed only on the condition that he was representing an industry group rather than a company, and that even this group was to remain anonymous, gave a well practised analysis:

[147] Accessed 1 October 2010
[148] See for example: 'Feathers fly over cover-up, poultry farmers cry foul', Jakarta Post, 27 January 2004

'AI hit mostly native chickens… The government tried to help the small farmers, but they did not care. Now AI is finished. There are just some intermittent outbreaks in the villages'.[149] In their 2009 Annual Reports CPI and Japfa both headline the exchange rate of the Indonesian Rupiah against the US dollar, and the international price of the main feed ingredients, corn and soybean (which comprise 70-75 per cent of feed composition) as major 'business risks', attributing their stellar 2009 performances most largely to the strengthening of the Indonesian Rupiah and a substantial fall in international prices for corn. 'Farm industry diseases such as Avian Influenza' are ranked as lower risks, along with low entry barriers for competitors, and 'Government Regulations'.[150] CPI suggests that 'such disease [as HPAI] may cause large-scale death of livestock within a short period of time. This may reduce demand on the Company's products, which will eventually reduce the Company's income'.[151] The future, however, is pronounced to be bright:

> The continued increase in our sale of DOC is evidence of the sustained recovery from the threat of Avian Flu (AI)... The constructive steps taken by the Government to educate the public and poultry traders as well as regulations to contain the epidemic have contributed to a significant reduction of the AI threat. For its part, the Company continued to enforce extensive bio-security measures at all our breeding farms and to take an active role in minimizing the public's exposure to AI risks by ensuring that only healthy and disease-free DOCs are supplied to Indonesian poultry farmers.[152]

Japfa is less sanguine:

> … the Avian Influenza that has started to emerge again, may reduce public demand and consumption of poultry products. Even though none of the Company's farms have been affected, there is always a possibility that the weight of public concerns will result in a decreasing demand for the Company's products, and reduce the Company's income.[153]

Few people outside these large corporations know what goes on inside their facilities. A senior civil servant suggested: 'The policy maker has no power to control the [poultry] industry, especially at the local level. It is like we are in a helicopter. We can look down and see the problem, but we can't control it.'[154] An international observer commented: 'The only way to know there is an outbreak on a farm is smoke from the fires [of burning carcasses], or disinfectant going in through the gate'.[155] What is evident is that the corporations would prefer not to acknowledge H5N1, and are keen to deny the presence of a disease which has been

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[149] Interview, Jakarta, 9 September 2009
[150] Source: PT Japfa Comfeed 2009 Annual Report p.90
[151] Source: PT Charoen Pokphand Indonesia 2009 Annual Report p.29
[152] Source: PT Charoen Pokphand Indonesia 2009 Annual Report p.7
[153] Source: PT Japfa Comfeed 2009 Annual Report p.90
[154] Interview, Jakarta, 11 February 2010
[155] Interview, Jakarta, 26 August 2008

proven to reduce demand for their products and detrimentally affect their bottom line earnings.

As well as suppressing discourse relating to the H5N1 virus, and its effects, and demonstrating enthusiasm to cast blame on less 'modern' small-scale producers, the transnational corporations that control the most profitable sections of Indonesia's large poultry industry operate with little regulatory scrutiny, and suggestions that they continue to share favoured connections with senior government figures at both national and local levels appear well founded. Again, the rationalist constructions of modernity associated with effective and equitably deployed government regulation that underlie the international approach are confounded. Doubtlessly, these large, rationalist and highly technical corporate entities have taken the threat of H5N1 seriously, and constructing the associated risk as reduced profits and share prices, have moved significantly to sanitise and secure their own facilities. According to this harsh commercial logic however, the fact is that for these large companies, the arrival of H5N1 actually represents an opportunity. Should less technical, and less well capitalised, operations than their own fail due to the effects of the virus, or if fewer people embark on commercial poultry rearing activities in the face the challenges posed by the virus, a greater market share will come their way. This interpretation was evident in the rumours some respondents discussed. Along with the USA and China, the conglomerate companies were often proposed as being responsible for the introduction of the virus to the country for reasons purely of market share and profit. Once again, a purified understanding of the virus as nature amenable to control by dispassionate and rational science is compromised by cultural factors, in this case unfettered commerce and capitalism.

6.7 On the farm

If feed and DOC production is dominated by a small number of transnational actors operating standardised procedures, broiler farming – the processes associated with housing, watering, feeding, medicating and monitoring DOC until they are ready for harvest after 28 to 35 days – conversely presents a very large number of actors engaged in a wide range of different practices on a wide range scales. As mentioned above, a style of contract farming (*inti-plasma* or nucleus-plasma) dominates, accounting for up to 80 per cent per cent of production.[156] CPI is reported to be not involved in contract broiler farming in Indonesia, but all the other integrators are, and thousands of other smaller enterprises fulfil a similar role in providing farmers, who supply land, sheds and labour, with DOC, feed, pharmaceuticals and technical

[156] Interview, Jakarta, 20 January 2010

support, and importantly, a fixed price for the full grown birds at the end of the cycle. Contract operations can range in size from 50-50,000 birds, but typically 10,000-15,000 are farmed in one cycle, most often in bamboo framed sheds on the edges of villages, or in the countryside. Some interviewees suggest that the contract form benefits farmers by providing them with liquidity, protection from fluctuations in the prices of inputs and outputs, and technical expertise that they would not otherwise have access to, including veterinary services.[157] Others suggest that contract farmers are widely exploited as suppliers of cheap capital in the form of their investment in land and buildings, and cheap labour.[158] Demand for nuclei and plasma by each other reportedly varies. In late 2009, plasma farms were keenly being sought by nucleus businesses around Yogyakarta, for example, whilst 100km to the east near Sragen, the converse situation applied.[159]

Forms of contract vary greatly, but in the case of poultry disease, only rarely will a farmer receive any payment for birds which have died, and beyond certain mortality limits, the farmer may actually become indebted to the nucleus for DOC and feed expended before the die-off. One analyst suggested that this system is founded on, and exploits, Javanese traditions of patron-client relations between recompense and labour, boss and worker, and informed townspeople and ignorant country dwellers.[160] Nucleus operators say that to provide alternative reimbursement systems is to encourage bad farming practices, laziness, and disease.[161] The net result, however, is that nucleus companies take none of the production risks associated with disease, including die-offs as a result of H5N1, which instead rest entirely on the farmers. So-called 'independent' farmers, who again cover a wide range of practices, and range in scale from 50-150,000 birds (as far as this research has been able to determine), face similar, or even starker, consequences as a result of disease. In these circumstances, the response of many farmers to illness in their poultry flocks is to move the birds to market as soon as possible, even if this means accepting a reduced price. Better managed farms – contract and independent – will have protocols which allow for reporting, sampling, rapid and laboratory testing, and even emergency culling, disinfection and burning, but even if they are followed, test results will take several days to be confirmed, providing ample time to market any birds that have not succumbed. As one respondent, a large independent farmer, explained watching trucks of broilers arriving at a market: 'You are interested in H5N1. I am worried

[157] Interview, Yogyakarta, 25 October 2009
[158] Interview, Jakarta, 9 February 2010
[159] Interview, Yogyakarta, 25 October 2009
[160] Personal correspondence, 23 September 2009
[161] Interview, Jakarta, 9 September 2009

about poultry disease. All the farmers care about is the money'.[162] Until recently dead birds were often part of this economy, to be eaten by farm staff, or sold cheaply to merchants who regularly called on farms. In the commercial chain, this is the despised '*mati kemarin*' meat, but few in the countryside have inhibitions towards eating ailing birds slaughtered and eaten quickly, if well cooked. A number of interviewees recounted occasions of cooking and eating sick birds, and one respondent recalled being taught by his mother to always take the sickest looking bird from the yard when selecting one for the kitchen.[163]

One effect of the arrival of H5N1 has been to put both contract and independent farmers in a bind. They face pressures similar to those on the integrators to downplay, or deny, the existence of the disease, in order to 'keep the flow moving' through the markets, as one interviewee put it, yet at the same time they suffer the economic consequences and stigma of the disease more directly. Poultry farms have never been popular as neighbours, largely because of the acrid smell of poultry droppings, and instances have been reported of citizens rejecting the presence of a farm in their area by blockading its road traffic.[164] Farmers accept that they have to work to maintain good relations. One said:

> Even though my cage is in the middle of residences, thank God, I have never had a problem with the people. But… when I am harvesting, I usually give one or two chickens to each close neighbour to barbeque, even though they do not ask. In profit or in loss, I usually expend up to 15 chickens every harvest time for free.[165]

It is also the case that if you ask almost any householder what the most likely source of any poultry disease in their area is, they will point towards the nearest farm.[166]

Poultry diseases, including those other than avian influenza, and responses to them, are discussed in more detail in the following chapters. Here it is noted that poultry disease and mortality are common across the countryside of Java. Even well run farms expect a mortality rate of two to three per cent in any one cycle, and losses can run as high as ten per cent on some farms without provoking alarm.[167] Newcastle disease (ND), often known as *Tetelo* or *Kok*, a contagious and fatal viral disease affecting most species of birds, is common, although it can be, and is, vaccinated against. Symptoms include sneezing, coughing and respiratory distress, nasal discharge, a greenish watery diarrhoea, depression, muscular tremors, drooping wings, and twisting spasms of the head and neck. Like avian influenza, it can cause large numbers of sudden deaths, but does not transmit to humans. Gumboro (Infectious Bursal Disease), also a

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[162] Interview, Solo, 11 August 2009
[163] Interview, Jakarta, 17 Oct 2009
[164] Interview, Yogyakarta, 24 October 2009
[165] Interview, Bogor, 9 January 2010
[166] Interviews, Jakarta, 17 Oct 2009
[167] Interview, Solo, 11 August 2009

highly contagious viral disease characterised by diarrhoea, listlessness, anorexia and an unsteady gait, is similarly prevalent, although mortality rarely exceeds 20 per cent, along with fowl cholera (*Pasteurellosis*), a bacterial disease characterised by green diarrhoea, a swelling of the wattles, oral discharges, depression and increased respiratory rate, and fowl pox (*Kutil*), which is spread by mosquitoes and is characterised by yellow wart-like eruptions (Restuadhi, 2009). Two respondents who had tried small-scale broiler farming and given up, gave their perspective:

> The main fear is '*kok*' or '*tetelo*' which often wipes a stable out. We lost a flock in August last year, and have not bothered to replace it. *Kok* comes in August every year. You go into September and it's over. No one understands why…. Here we have still not had avian influenza (*flu burung*) but everyone has seen it on TV, and Kuningan nearby has had it badly. But there are lots of other diseases…. With Gumboro they get red spots and don't want to stand up. They are weak and don't want to eat. And then there is chicken cholera and even chicken malaria. I am thinking of getting some ducks. They don't get *flu burung* and they don't get *tetelo*, and they get a good price…. The problem is that the rats take the little ducks, and there are lots of rats here'.[168]

Continuing this conversation by probing the assertion that the area had not experienced avian influenza, both respondents admitted that it might have, but that it was 'not good politics' to discuss it, that no officials had visited as was the case with the outbreaks shown on the television news, and that it was hard to distinguish between avian influenza and Newcastle disease. 'Sudden death' is the most widely known symptom of avian influenza, but Newcastle disease also causes sudden death, and many of the excretions, swellings and respiratory symptoms associated with other diseases can appear similar to those for avian influenza. Even experienced poultry veterinarians admit that they find it difficult to make a conclusive diagnosis of avian influenza without a laboratory test: HPAI has no pathognomonic signs (Alders and Bagnol, 2007). Restuadhi (2009:27) quotes a poultry farmer from South Sulawesi on this issue:

> I rear poultry, I'll go straight to the point, Sir? Up to now, I don't know exactly what the signs of Bird Flu are. Many people said that the sign is sudden death. In fact, that sign is not Bird Flu. Also there's ND... I don't know if the disease is Bird Flu or not because I don't know the signs yet. What kind of sudden death is it?

A study by Snell (2009) in West Java found some interviewees using the same term (in the local language) for both avian influenza and Newcastle disease, and a farmer interviewed for this study said: 'I am still confused about AI, when I saw it on television, the symptoms were similar to ND. Therefore, I still do not know if AI is real or not'.[169]

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[168] Interview, Majalengka, 17 October 2009
[169] Interview, Tangerang, 25 June 2009

Irrespective of the threats posed by H5N1, the commercial pressures on poultry farmers in Indonesia are significant. The vast majority of farmers – independent producers, or those with contract arrangements – barely scrape by, and the arrival of one more lethal and contagious poultry pathogen threatening their livelihoods does little to concern them. On the majority of farms in Indonesia, a dead chicken is simply a dead chicken, and the cause of death is inconsequential, even though mass mortality causes significant and sudden financial loss. Like the integrated companies, however, the farmers see no incentives to report outbreaks and a number of reasons not to, including the importance of not scaring consumers into boycotting poultry. As discussed above, consumer scares, even those that might be termed irrational, have caused dramatic and widespread difficulties on the farms in the recent past. The farmers, as well as the commercially and politically powerful DOC and feed producers, therefore have good reason to suppress H5N1 related discourse, and many deny the existence of avian influenza, especially on their farms or nearby. This position is bolstered by the need for a highly technical diagnosis of the H5N1 pathogen, which is rarely available in a timely fashion. Again, a purified approach, focused on a bio-medically defined virus, is shown to be challenged by cultural and social factors. The next section of the chapter considers 'backyard' farmers: those who keep poultry at home. Commercial concerns are less evident in this domain, but complex cultural matters such as social identity and social cohesiveness come to the fore.

6.8 In the backyard

To read in the academic literature that an estimated 60 per cent of all Indonesian households (some 30 million homes) keep chickens, ducks or quail in their backyards (Padmawati and Nichter, 2008:32), or that in rural Java, over 100 million birds are being reared at any one time in and around domestic dwellings by some 60-70 per cent of a population of 135 million (Sumiarto and Arifin, 2008:13), does little justice to actuality. The fact is that practically everywhere on Java (except in my experience, on the tops of volcanoes), the days are punctuated by the crowing of roosters, and with the exception of the main streets of the main cities, malls, and some up-market residential areas, chickens are to be found everywhere. In the countryside, they are particularly prevalent: speckled and dusty-brown hens, and paler chicks, scratching about, and larger, dramatically coloured black, green and rusty orange cocks, strutting the roost, or settled in individual cages outside houses. Wherever there are people, there are poultry birds. The Javanese affection for birds was discussed earlier in this chapter, but household poultry keeping goes significantly beyond bird fancying, although it is often part

of it. For many, keeping free-range chickens around the home makes a small but important contribution the economics of the household, providing eggs on a daily basis and meat for special occasions. As such poultry keeping can be seen as part of an informal, intensely local, economy which includes growing fruit and vegetables around the home, and possibly keeping cows or other animals in a cooperative venture nearby. Men often take on heavier gardening work, and women often look after the poultry, but I have seen men and women performing all types of tasks. A 1971 study (Penny and Gittinger, 1971) found that these 'house gardens', which then extended over 1.5 million hectares on Java, returned more in cash and benefits than dry land sown to food crops or wet rice land. Among the poor, free-range chickens also serve as an important form of capital, or savings, which are easily sold when the need for cash arises.

One respondent suggested that for him, the major advantage of keeping chickens was that it was very simple and not hard work:

> It is just like a hobby really. You do not need any special training. Maybe you eat them, maybe you sell them. They are useful for incidents (*insiden*) when you can sell them anywhere, and they help keep the ground clean. My wife will usually make the decision to sell. I just keep an eye on them, but if I am not here someone else can, my wife, friends, children. I give them *dedak* (rice husk) to eat and sometimes scraps of vegetables and papaya for vitamins, but they don't need it. At night, they sleep in the trees, and there are all sorts of places for broody hens to go. If you don't take all the eggs, chicks appear like magic… and the process continues. I never have to buy chicks. It all comes for free'.[170]

Another interviewee, owning one rooster, five hens, and around 40 four-month old chicks, said:

> In the beginning it started as a hobby. It is satisfying to see them grow, and it is good to have free eggs every day. But after two years I bought a rooster, mainly to make more chickens for our own consumption. Then one day my neighbour had an occasion and needed *ayam kampung*, so I sold some of my chickens to him. The result was not bad, and it motivated me to be more serious. Now I could sell one or two chickens to my neighbours nearly every day if I had them, and that is useful money.[171]

For others, the routine of growing something, harvesting it, and then eating it, is a more fundamental, simple pleasure. An elderly man living in Bantul, near Yogyakarta, who had lost 150 chickens during one event in 2006 (due to 'stress', according to him, caused by the earthquake in May that year) said:

> I don't keep chickens now but I miss slaughtering them. It was part of my routine. Life should be like that. Killing a chicken and then eating it with your family on some special occasion. The slaughtering is part of the process. It's not the same if someone

[170] Interview, Majalengka, 17 October 2009
[171] Interview, Majalengka, 9 October 2009

> else does it… I am a bit ashamed if we have to buy the chicken already slaughtered… it is expensive and I don't know where it comes from.[172]

Every one of the 45 people keeping backyard poultry that were interviewed for this study – largely men living in the countryside in west, central and east Java, and in South Sulawesi, Sumatra and Bali – had experienced poultry mortality as a result of disease. Their experiences and knowledge of disease corresponded very largely with those of the more commercially orientated farmers mentioned in the previous section. One said:

> It just happens. I can remember my father having dead birds when I was a boy, and we all sometimes have sick birds now. Chicks, hens, cocks, sometimes they get better and sometimes they don't, even if you give them medicine. Maybe it is just one or two. Maybe it is all of them. We call that *aratan*. It often comes like the wind towards the end of the dry season… I clean the cage almost every day to keep the smell away, give them vitamins sometimes, and wash them. But still they get sick and die sometimes. Maybe it's the weather. Who knows? We either eat them, give them away, or throw them with the other rubbish by the river.[173]

Generally, there is an understanding that like humans, chickens are more likely to suffer disease when their physical condition is poor. One interviewee said: 'If their body was in a fit condition they would not be infected by disease, but if their body was in bad (down) condition they could be infected by disease'.[174] Native chickens (*ayam kampung*) are – proudly – considered to be less susceptible to disease, as well as better to eat than broilers. The same respondent said:

> Broiler chickens are less durable than native ones because broiler chickens are accustomed to being injected since very young, while native chickens are more durable because they are very seldom injected, or even never. In addition, broiler chickens are always caged and are forced to grow faster. They never go out walking, so they have no chance to get strong, and will easily be stricken by disease.

No backyard farmers interviewed reported calling in veterinary expertise in the event of poultry disease, although many, as discussed in chapter 7, made use of home-made remedies, poultry pharmaceuticals and medicines designed for human use. Many suggested that they might call on the expertise of other family members, or neighbours, and that within these groups, any event involving mass mortality would be discussed. However, according to one interviewee: 'One or two birds dying is hardly news. You might as well say the sun has come up'.[175] Regarding larger die-offs, the fact is that in Java's densely inhabited, and gossipy, villages, word of any larger event will quickly spread. The same respondent explained:

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[172] Interview, Bantul, 24 October 2009
[173] Interview, Majalengka, 10 October 2009
[174] Interview, Surabaya, 3 November 2009
[175] Interview, Mojokerto, 16 October 2009

> … automatically, any incident of *aratan* would be disseminated by mouth to mouth so that all the people in the village knew and could be careful. It is a tradition in this village that if *aratan* happens, everyone is interested because it is an important issue which needs attention.

Even large die-offs are however rarely officially reported to the village head, or his office. The respondent above continued:

> The *aratan* phenomenon would not make me report to the head of village. He would hear of the incident by word of mouth, of course, but he would not want a direct report. Bad news is never welcome, and what could he do? In case of help-giving, illumination, and medicinal treatment to chickens, we have never had any support in this village, not from the government, nor from other institutions like campuses.

Another respondent said: 'I have never reported my dead chickens to people, especially officials or health care workers. This is because I think they never provide solutions to the problem that we poor citizens face. If chickens had votes, it might be different'.[176] Avian influenza, and the surveillance efforts associated with it that are discussed in chapter 8, have complicated these local, village matters. One respondent spoke for many when he said: 'What is most worrying these days about keeping chickens is not disease but the arrival of public health inspectors who may visit at any time to exterminate the birds, even if they are healthy'.[177]

Like the commercial farmers discussed in the previous section, smallholder 'backyard' farmers are well accustomed to the presence of poultry disease and mortality, and have a detailed appreciation of them. This can include such bio-medical conceptions as immunological resistance. Similarly a wide range of remedies are used, including sophisticated pharmaceutical products designed for both humans and poultry. Rarely, however, is avian influenza (*flu burung*) invoked as an explanation for poultry mortality, even for the rapid mass die-offs that are characteristic of the H5N1 virus. Instead a broader conception is often deployed which links disease with the weather, thus side-lining social factors, the attribution of blame, and the possibility of control by humans. Scavenging backyard birds are doubtlessly an important element in the mixed economy of the rural poor, but they also form an important part of their social identity: ideally a family has its own poultry around its house, which can be slaughtered and eaten as part of a ceremony. Rural, and often poor, poultry owners can then be seen as a socially cohesive group that is prepared to share information internally, but not with any form of authority, even very local ones. Yet again, it can be seen that significant complex cultural matters are involved in interactions between humans, poultry and the H5N1 virus.

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[176] Interview, Medan, 3 November 2009
[177] Interview, Medan, 4 November 2009

6.9 Conclusion

This chapter has shown how the universalist, rationalist norms of the international community were imported wholesale into Indonesian national policy, with the approval of an internationally orientated president. Existing national capacity to implement such an extensive plan was acknowledged to be weak, but international support and funding were available to implement it, and at the highest levels, determination was expressed to align the country with international norms. The president spoke publicly about his concerns regarding a catastrophic influenza pandemic.

Among the many and varied actors involved with poultry in Indonesia, however, such concern is not evident. A small number of politically well connected integrated corporations, which are concerned most largely with feed and DOC production rather than farming, kept their own counsel, and failed to engage publicly. It was quickly recognised that acknowledgement of H5N1 infection, and particularly deadly human cases, resulted in a steep fall in poultry consumption, especially in urban areas, and for commercial groups, the attendant fall in profits was the most significant risk constructed around the virus. As long as people keep eating chicken, their financial returns are little affected by sporadic, or wider scale, incidence of disease, and may even be enhanced as more chicks are required to replace the birds that have perished, and more feed is required to grow the meat that has been lost as a result of disease.

Commercial farmers, operating on a wide range of scales, and often tied by contracts to the large integrators or intermediaries, similarly have an interest in avoiding consumer scares, and are often dependent on the large integrators for technical advice and inputs. In the event of disease, commercial pressures force them to move their product to market as soon as possible, and the dangers of spreading the disease are ignored. For these groups too, the risk constructed around H5N1 relates most significantly to commercial pressures associated with not being able to sell their birds, rather than the death of the birds on their premises.

Among the many households that keep free-range poultry, poultry mortality is accepted as a common event and given the multiple sources of income many households have, is rarely one of catastrophic consequence. Despite a fine grained appreciation of poultry disease, no distinction is made between poultry death resulting from H5N1 infection and poultry death resulting from other pathogens, and given the prevalence of poultry in everyday life, few people are inclined to construct even sick poultry as a risk to human health.

These varying risk constructions pose a range of challenges to the universalist response which is inclined towards a modernist, purified approach centred on the virus and its

eradication, irrespective of the circumstances and the consequences. Hybrid constructions of the risk, involving cultural factors, with little specific relation to the virus as a bio-medical entity, are at the nub of many of these challenges. Large commercial producers are concerned about profits. Commercial farmers, large and small, are concerned about livelihoods. Smallholders and non-commercial poultry owners are concerned about threats to their social identity. Arching over all is a widespread and longstanding scepticism regarding the competence and intentions of government intervention, national, regional and local.

The challenges that these varying risk constructions present to the technical H5N1 response are examined in more detail in the following three chapters. Each chapter investigates a specific intervention: market chain restructuring, disease surveillance, and risk communications. The rationale behind the focus on these interventions is given next.

6.10 Introducing the case studies

The three case studies that form chapters 7, 8 and 9 represent relatively discrete elements in the response to the H5N1 virus in Indonesia, as determined by national plans which were discussed earlier in this chapter. My argument there was that the response is founded on and driven by rationalist, universalist constructions of modernity which includes a determination to purify and separate nature, science and knowledge from culture, politics and power. Previously, chapter 4 had argued that globally orientated constructions of H5N1 risk as a deadly and costly influenza pandemic had motivated and financed this response, and chapter 5 had suggested that this risk construction found little concurrence with concerns in Indonesia. Conceptually, it had been previously argued that the construction of modernity dominating the international response has no intrinsic validity or authority, and proposed that varying and dynamic constructions of modernity at play in Indonesia were related to different H5N1 risk constructions.

The objective of the three chapters that follow is to examine and analyse the emergence of these separate H5N1 control policies, and their interactions with the populations they were deployed into. Each case study represents a different initiative, designed and implemented by different networks, to promote different objectives in and among different populations. Each initiative is driven by different dominant constructions of modernity, and introduces different constructions of H5N1 risk. Each initiative also involves different relations of authority with groups that have varying involvements with poultry, and varying constructions of modernity. In each case, possible motives for supporting, resisting or ignoring the initiatives differ. Each case study therefore provides an opportunity to examine

the interactions of one set of constructions of risk and modernity, as determined and presented by an authority, with everyday practice, and the different constructions of risk and modernity in which such practices are embedded.

Chapter 7, 'Restructuring market chains', is specific to Jakarta, where processes of industrialisation and urbanisation are linked to the emergence, spread and persistence of H5N1 in poultry. The chapter examines a set of city government regulations promulgated in 2007, which address commercial poultry slaughtering and marketing routines, and domestic poultry keeping practices in the urban area. City administration discourse constructs H5N1 risk as a dangerous human disease, and current commercial and domestic practices as unhygienic and dangerous, but the new regulations are more significantly driven by modernist ambitions towards progress, order and government authority in the capital. Little science is deployed in the design of the new regulations, or to support implementation, and with everyday experience, particularly amongst those working with poultry, militating against the construction of the H5N1 virus as dangerous, the new regulations have little effect in the commercial sector where they would be economically and socially disruptive. Amongst non-commercial actors, however, the new regulations are widely accepted. The chapter therefore illustrates the case of H5N1 constructed as a human health risk deployed in the interests of government authority into two environments with different concerns and risk constructions: a complex commercial network involved with growing, processing and marketing poultry; and a large urban population with little commercial involvement in poultry.

Chapter 8, 'H5N1 Surveillance', concerns Indonesia's H5N1 surveillance system, which has been deployed into rural areas since 2006. Internationally funded, designed by the FAO, and implemented by agriculture ministry officials at national and sub-national levels, H5N1 risk is constructed by these authorities as a deadly disease of poultry, which may also be dangerous to humans, and the driving constructions of modernity relate to science, administrative efficiency and benevolent moves towards agricultural development. Directed most significantly at rural populations keeping poultry domestically, the system is cast as 'participatory', designed to capture and use 'local' knowledge, but rationalist risk management approaches are shown to ignore and suppress non-scientific knowledge. In the system, 'participation' involves subscribing to rationalist processes and science-led risk constructions intermediated by government officers. The chapter therefore illustrates the case of H5N1 constructed as a scientifically defined animal health risk deployed through government authority into variegated but well defined rural populations: those involved with keeping household poultry.

Chapter 9, ‘Communicating risk’, analyses a set of ‘risk communication, information and public awareness’ initiatives deployed nationwide into community and professional groups, schools, and via mass media by UNICEF, working with national and local partners. In this case, funding agencies and implementing actors construct H5N1 as a human pandemic threat as well as a dangerous disease of humans and poultry. Dominant modernist constructions driving the programme relate to public health, preventative hygiene and self-improvement, and a ‘deficit model’, which sees experts prescribing hegemonic regulations to a ‘deficient’ public, is at the heart of many initiatives. The chapter therefore illustrates the case of H5N1 constructed as a public health risk deployed by non-government agencies into a wide range of groups.

In each case, social, cultural and political factors are shown to construct hybrid risks around H5N1, which complicate and in some instances confound responses based on rationalist, universalist principles dependent on purified conceptions of nature, science and knowledge. These include commercial and livelihood concerns, variable trust in institutions and expert systems, and issues such as social identity, social cohesion as well as power dynamics. In the move from policy to practice, in the recursions between them, and in the multidirectional interactions between the interventions and the target groups, each case study shows how risk and modernity hybridise, creating dynamic, variegated ‘regional’ constructions that are often at variance with universalistic constructions.

7. Restructuring market chains

> *Negara mawi tata, desa mawi cara* ('The capital has its order, the village has its customs').
>
> Javanese proverb. Quoted in Scott (1998:33)

This chapter examines attempts to restructure the poultry meat supply chains into Jakarta, Indonesia's capital city, and regulate domestic poultry keeping practices there. Although contact with live poultry had been identified as the cause of H5N1 infection in the majority of human cases in Indonesia, the national response was slow to identify slaughtering and marketing processes for efforts related to H5N1 control. In Jakarta, however, ambitions of the city's governor towards order and development led to regulations requiring all of Jakarta's poultry supply to pass through five new industrial slaughterhouses before being marketed, and for domestic owners to register their poultry and other birds. The first aspect of this plan has, to date, largely failed, because actors at all levels involved in all aspects of the poultry production and marketing processes have ignored or resisted it. The dominant integrated companies can see no demand for, or profit in, any new arrangements, and doubt the competence of the city's administration. Market traders are most concerned about added cost and, like consumers, consider the freshness of the meat sold to be paramount. In the supply chain, brokers have significant commercial power and they too can see no advantage in any new arrangements, which would disrupt their existing routines. All the way through the market chain, hybrid risk constructions are evident which combine the biological threat of the virus to poultry and human health with cultural matters, most often involving issues of politics and power dynamics. Different groups construct different hybrids, but financial and livelihood concerns are pre-eminent issues, not the direct threat of disease in poultry or humans. By way of contrast, the regulations concerning domestic poultry keeping were accepted by the public. Significantly, no commercial structures were involved, and public concern was high following a peak in H5N1 related human infections and deaths, widely reported in the media. In domestic areas all over Jakarta, H5N1 risk was constructed as the possibility of disease and death, rather than a threat to livelihoods, and many people proved prepared to change their behaviour in response.

7.1 Conurbation Jakarta

Like many Asian urban areas, Indonesia's Special Capital Region Jakarta, *Daerah Khusus Ibukota* (DKI) *Jakarta*, has grown rapidly over the past 40 years, and is now considered to be

the third largest city in the region, after Tokyo and Seoul. The 2010 national census records 9.6 million inhabitants, up from 4.6 million in 1971, but other estimates put today's population as high as 13 million (BPS, 2009). National population increase has accounted for part of this growth, but as in many other countries, Indonesia is experiencing rapid urbanisation, and Jakarta, key to the country's rapid economic growth over the last decades, is at its centre. The growth of a conurbation was indicated in 2000 when the term 'Jabodetabek' (made of the first two or three letters in the names of its constituent elements: Jakarta, Bogor, Depok, Tangerang, and Bekasi) was officially adopted for the metropolitan area. In 2010, the population of this area is considered to be around 28 million people, up from 17 million in 1990,[178] close to that of Mexico City, Mumbai and Sao Paolo, the world's largest cities. Population density, at around 14,000 per square km across six municipalities also is high, and rises to 19,000 per square km in Central Jakarta (BPS Provinsi DKI Jakarta, 2010:74).

The common pattern of urbanisation and rising incomes leading to increased consumption of animal protein has been discussed in chapter 6, together with the popularity of poultry meat in a Muslim majority country. The consequences on demand for poultry meat, and eggs, in Jakarta are dramatic. Normile and Enserink (2007:448) suggest that between 300,000 and 400,000 chickens are consumed in Jakarta each day, and Muhammad Azhar, the Agriculture Ministry's coordinator for bird flu control, 'around 700,000'.[179] However, interviewees in the poultry industry, government, and international organisations consistently argue that the figure is closer to one million birds per day.[180] This equates with a higher than average GDP per capita for the region, which is estimated to exceed US$5,000,[181] and suggests that Jakarta consumes more than half of the national broiler production.

The economic power and political connections of the integrated poultry industry have also been discussed in chapter 6, but it is reiterated here that the industry in Indonesia is characterised by the combination of a fully industrial 'upstream' sector dominated by transnational conglomerate corporations, with more varied practices on a wide range of scales in both 'downstream' and farming sectors. Farming practices vary widely, but most broilers destined for Jakarta are grown under contract in small units (most often of 5,000 – 15,000 birds) within a roughly crescent shaped arc of producers, stretching from Serang in the west to Ciamis in the east, encompassing Bogor, Sukabumi, Bandung, Garut and Taskimalaya. Further

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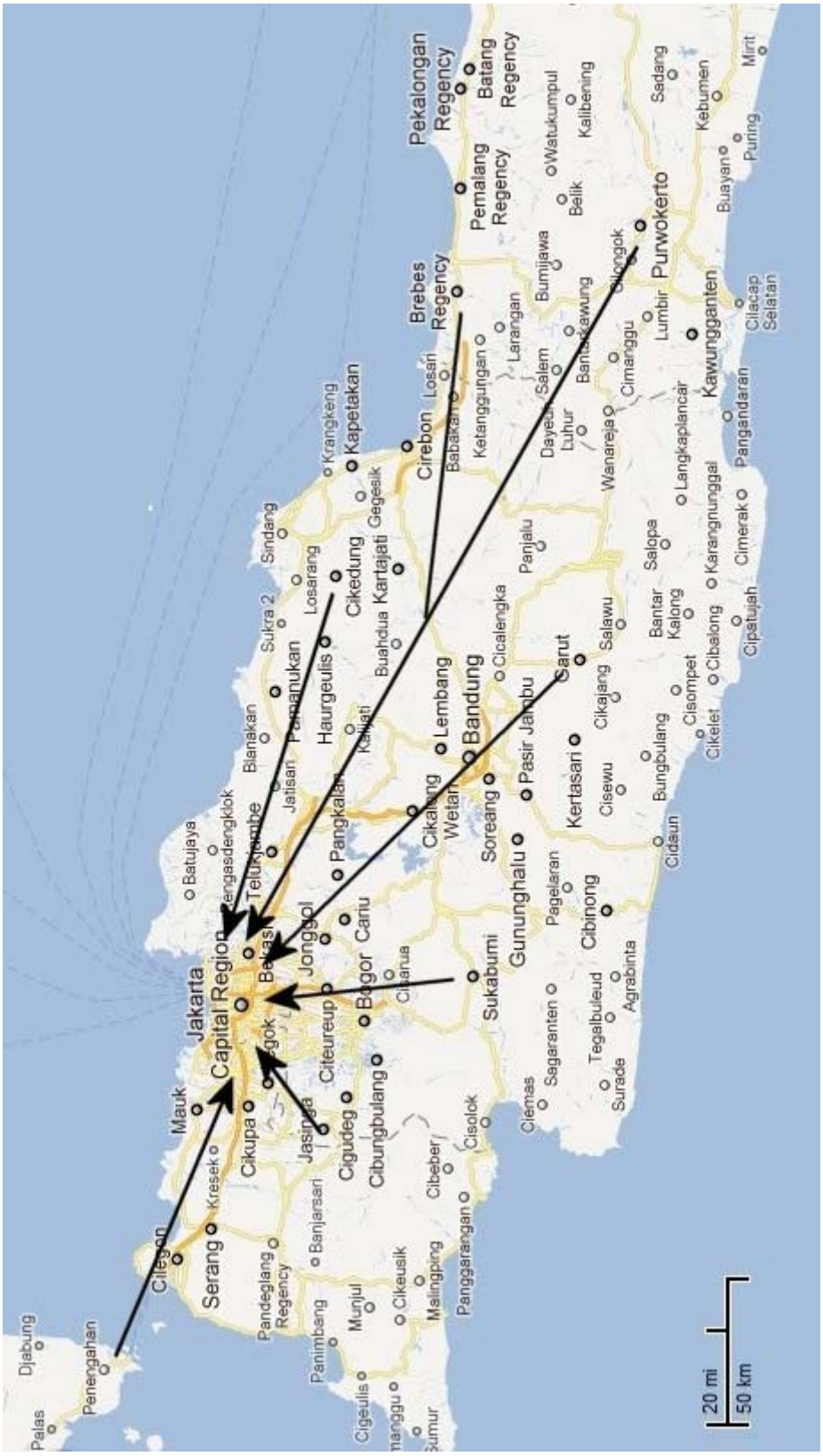
[178] Source: 'Population growth of Greater Jakarta and its impact', Jakarta Post, 26 March 2011
[179] Source: The Poultry Site News, 15 October 2008 http://www.thepoultrysite.com/poultrynews/16152/ministry-outlines-plans-for-poultry [accessed 20 April 2010]
[180] Interviews, Jakarta, 8 and 13 February 2010
[181] Source: The Economist, 21 September 2009, A special report on Indonesia p.2

afield, farmers in Lampung in south Sumatra and central Java also supply the capital, and closer to the city there are significant farming operations in Bekasi and Tangerang. Figure 7, below, gives a graphic representation of these movements. All of these birds are transported from the farm by road, usually live in crates on small trucks, to around 210 collector yards, where they are marshalled before distribution, or delivered directly to approximately 1,950 slaughterhouses and wet markets spread across the city. Wet markets, which usually include small slaughterhouses, are estimated to account for up to 90 per cent of consumption in the capital, with some supermarkets, larger restaurants, and food processing operations being provisioned from larger slaughterhouses.[182]

[182] Source: Trobos, 1 March 2010. Available at: http://www.trobos.com/show_article.php?rid=22&aid=2140 [accessed 24 June 2010]

Figure 7: Poultry supply into DKI Jakarta.



Base map: Google/Tele Atlas 2011

7.2 Plans for 'modern' markets

Although poultry movements, especially of live birds, are widely accepted as having the potential to spread viruses and other pathogens, international and national policy makers were slow to identify the markets and the market chains as implicated in the spread and persistence of H5N1. Exposure to live poultry at retail markets in Hong Kong in 1997 had been identified quickly as a significant risk factor for human illness (Mounts et al., 1999), however, and isolation rates of H9N2 subtype viruses from chickens had been shown to be significantly lower in Hong Kong markets following the introduction of obligatory resting and cleaning days (Kung et al., 2003). Further south in the region, a study that had detected H5N1, and other avian influenza viruses, in birds and cages in markets in Hanoi, Viet Nam in October 2001, was not published until four years later (Nguyen et al., 2005). In Indonesia, the results of an epidemiological study in Bali in 2005, which had isolated H5N1 from birds in live markets (Santhia et al., 2009), were known informally before publication, and a January 2006 WHO risk assessment suggested that market infrastructures and cleaning practices were possible means of infection between birds and to humans, and recommended that H5N1 awareness should be incorporated into food safety programmes and a strategy be developed to achieve 'healthy markets'. These were incorporated into WHO protocols that were published in March 2006. Also in Indonesia, a comprehensive investigation of 598 suspected cases between July 2005 and June 2006 (of which 54 were confirmed and 41 fatal) found that 41 case patients (76 per cent) had had direct or indirect contact with poultry during the preceding two weeks, and that six (11 per cent) had had poultry-related occupations, including three farm workers, two live market workers and one shuttlecock feather selector. The over-arching conclusion however was that H5N1 influenza was a very rare disease in humans, with the high case-rate mortality in Indonesia most often being explained by late presentation at a specialist hospital (Sedyaningsih et al., 2007:527).

As discussed in chapter 6, the initial H5N1 response was focused primarily on animals and driven largely by veterinarians focused on the virus as a purified bio-medical entity. The otherwise comprehensive National Strategic Work Plan (NSWP) 2006 - 2008 suggested only in its penultimate section, 'Element 8: Research and Development', among 16 other bullet points (one of which was 'vaccination strategies in quail'), that:

> … studies were required to:
>
> - Establish information on bird and product marketing and movement patterns and the risk factors associated with these trading practices;
>
> - Investigate the social and economic impact of imposing restrictions on live bird markets temporarily or permanently.

The final 'Element 9: Industry Restructuring' of the same 2006 - 2008 plan limited itself entirely to the farming sector, suggesting that: 'industry restructuring will take considerable time and must be considered a medium to long term goal', and offered the conclusion that 'Drastic changes might well be socially unacceptable' (Ministry of Agriculture 2005:17-18). Even in the earliest days there was some recognition that cultural factors were unavoidable. By June 2008, when proposals for a second phase to the NSWP were finalised, for implementation 2009 - 2011, attention had however swung more towards the markets. One of four main 'thrusts' of the revised plan was given as:

> Interventions to safeguard commercial poultry production from HPAI, thereby protecting human health (including restructuring of poultry production, slaughtering and marketing systems to exclude production and live bird marketing from cities) will be introduced. A key and early strategy to achieve this will be building public-private partnerships to promote and coordinate industry-led initiatives. This mechanism will also address restructuring of the poultry production, slaughtering and marketing systems to exclude production and live bird marketing from cities. A progressive move to marketing of carcasses in urban areas will be facilitated (Ministry of Agriculture 2008:10-11).

7.3 Capital intentions

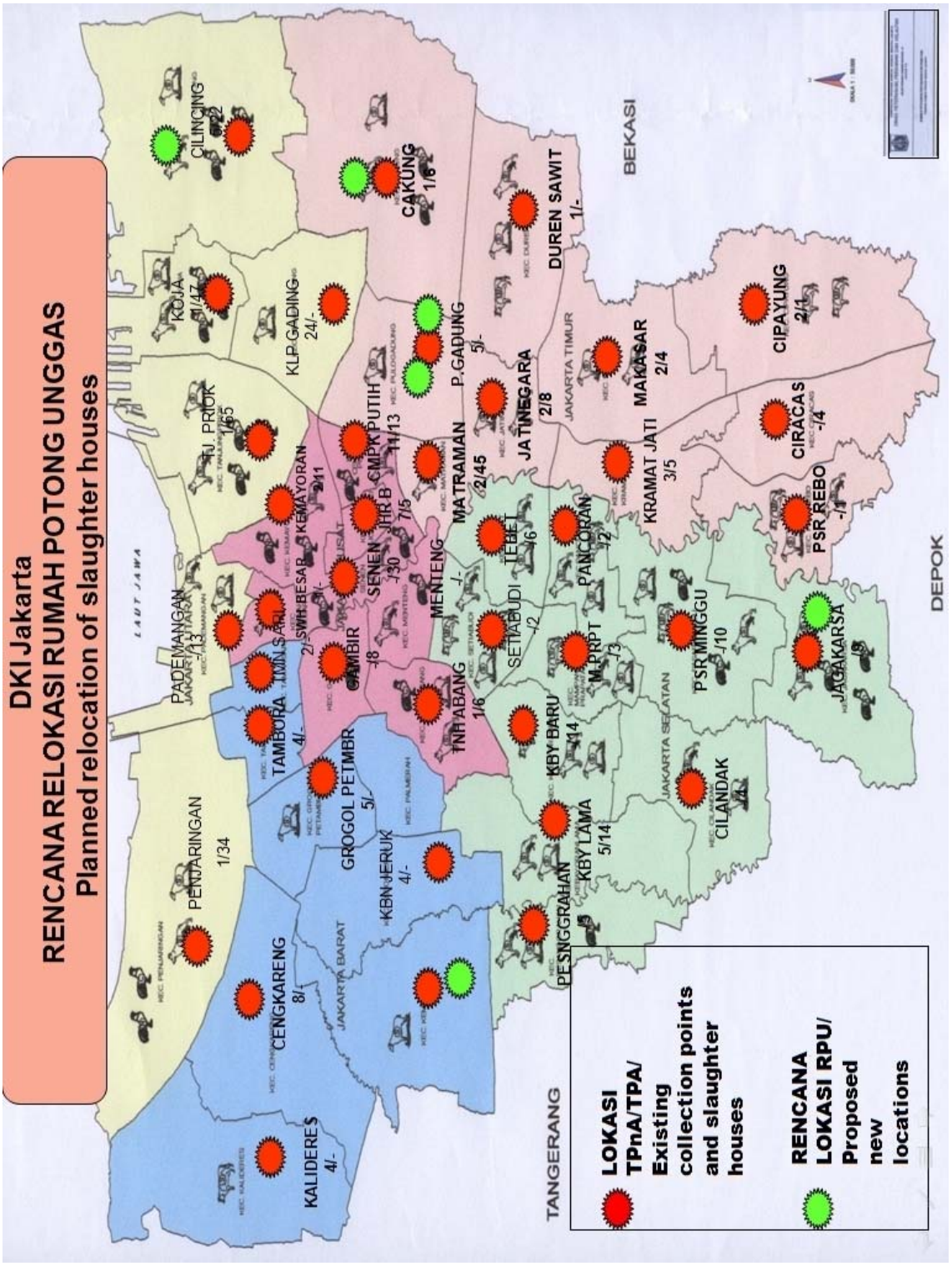
Jakarta was arguably ahead of this curve. Under Indonesia's decentralisation legislation, discussed in chapter 5, the city government has considerable autonomy in its own territory, and control of poultry movements and efforts towards what was broadly referred to as 'market chain restructuring' were major elements of a decree announced on 17 January 2007 by the then governor, Sutiyoso.[183] The decree had two main elements. One was a city wide ban on unregistered domestic birds. Hobbyists (and scientists) were required to obtain health certificates for their animals from the Animal Husbandry and Fisheries Agency. Then from February 2007, officials were to conduct door-to-door inspections ('sweeping') to check for birds – chickens, ducks, swans, pigeons and quail – with any uncertified animals being seized and culled with their owners receiving no compensation. Any H5N1 infected birds detected were reported to be open to the national government's compensation scheme, which was then set at Rp12,500 (about US$1.25) per bird. At the time, the city's animal husbandry agency estimated that about half the houses in the city's 2,684 neighbourhoods kept birds. With each

[183] The relevant instruments are: Jakarta Province Bylaw No.4/2007 dated 24 April 2007 on Poultry Farming and Circulation Control; Jakarta Governor Decree No.146/2007 dated 13 November 2007 on Instruction of the execution of Bylaw No.4/2007; Jakarta Governor Decree No.147/2007 dated 13 November 2007 on the Establishment of Provincial Committee of Avian Influenza Control and Pandemic Preparedness; Governor Instruction No.25/2008 dated 29 February 2008 on Intensification of Poultry Farming and Circulation Control.

neighbourhood supporting an estimated 1,000 fowl, it was suggested that over 2.6 million domestic birds were in the city.[184] This element of the decree is discussed at the end of this chapter. The other major element of the plan was the 'restructuring' of the poultry supply chains that involved checks to ensure that birds coming into Jakarta had health certificates, and enforcement of the regulations specifying that live birds were to be delivered only to five purpose built poultry slaughtering and processing facilities. Three new slaughterhouses were to be in East Jakarta, which already hosted some 60 per cent of the city's poultry trade, at Rawa Kepiting (a 2ha site), Pulo Gadung (1.5ha) and Cakung (1ha). Two were to be run directly by the Jakarta city government, and one by a private sector organisation. Two further facilities were proposed in South Jakarta (at Kebun Bibit in North Petukangan) and West Jakarta (owned PT Kartika Eka Dharma, a private company). A graphic presenting one iteration of this plan is presented in Figure 8, below. Separate efforts were to focus on relocating two exotic and pet bird markets at Pramuka in Central Jakarta and Barito in South Jakarta. The intention was that by April 2010 Jakarta would free of live poultry, 'a guarded island'.[185]

[184] Source: 'Time running out for city's backyard birds', Jakarta Post, 18 January 2007
[185] Interview, Jakarta, 3 December 2009

Figure 8: Planned relocation of slaughterhouses in Jakarta.



Source: DKI Jakarta Animal Husbandry and Fisheries Agency 2008

In James Scott's (1998:4) terms, this plan – state initiated social engineering towards 'utopian changes in people's work habits, living patterns, moral conduct and worldview' – can be seen to be driven by a 'high-modernist ideology':

> ... a strong, one might even say muscle-bound, version of the self-confidence about scientific and technical progress, the expansion of production, the growing satisfaction of human needs, the mastery of nature (including human nature), and above all, the rational design of social order commensurate with the scientific understanding of natural laws.

An uncritical, optimistic, Western by-product of scientific and industrial progress, carrying with it scientists, state officials and industrialists, and their ideologies and interests, Scott's high-modernism is clearly related to what has been described in chapter 2 as a modernist tendency towards the creation of separate, purified zones of nature and culture, of science and politics, and of knowledge and power. As will be discussed below, the restructuring plans largely fail, or at least to date have moved far more slowly than anticipated, most significantly because those involved at all levels and in all aspects of the poultry production and marketing processes have ignored and resisted them. Scott's analysis would predict this. Civil society in Indonesia's young and energetic democracy, as discussed in chapter 5, is far from prostrate, and the coercive abilities of both national and regional government are constrained by new decentralised administrative structures, and a widespread recognition that much of the country's history has been overly authoritarian.

This analysis, however, is not the focus of this chapter which argues that a modernist purified focus on the virus, which supports a universalised and globalised construction of H5N1 risk, finds little correspondence amongst the people whose livelihoods are involved with supplying poultry to Jakarta. Some of the risks constructed amongst these highly varied groups are related to the fluid relationship between government and citizens. As discussed in chapter 5 this is in particular flux in Indonesia, and little trust in government exists. As will be elucidated subsequently in this chapter, in the markets, in the supply chains and on the farms, the most significant factors relate to livelihood concerns. Dynamic, novel risk constructions are therefore dominant, which mix these daily and pressing concerns, and other social matters, with the possibility of the virus posing a threat to human health. Amongst commercial actors, the existence of any risk associated with H5N1 is therefore commonly denied, with the objective of avoiding the severe drops in consumption related to consumer food concerns discussed in chapter 6. Amongst domestic consumers, however, different dynamics are evident.

In considering the formulation and driving risk constructions behind Jakarta's new regulations, it is helpful at this point to recall that H5N1 had first been detected in Central Java

in October 2003, and that the January 2004 national government report to the OIE, which had been forced by media and other reports, had resulted in a significant drop in consumption of poultry in Jakarta. During the course of 2004 and 2005, the virus had then spread unchecked across almost the entire archipelago, and the announcement of the country's first confirmed human case, a 38 year-old government auditor (whose eight and one year-old daughters also died shortly afterwards), living in Tangerang, a Jakarta suburb, which had occurred in July 2005, had also caused a drop in consumer demand. With national poultry industry losses for the year to September 2006 reported to be Rp1.1 trillion (approximately US$100 million), and tourism, also economically important, reported to be affected, 2006 had been a winning year for the virus on all fronts: 'Bird flu causes losses of up to $2 billion', announced one Jakarta newspaper headline in December 2006, referring to a worldwide estimate.[186] More locally, in Jakarta, poultry sales had dropped again in January, from one million daily to 700,000, although it was recognised that the fall was smaller than in previous consumer shocks.[187] Also, at the time, the then health minister's refusal to share human H5N1 virus samples with the international community had become a high profile political and diplomatic event and was attracting much media attention in, and beyond, the country.

Against this background, and possibly with an eye on his forthcoming October 2007 announcement of presidential ambitions, Jakarta's then governor Sutiyoso put forwards Jakarta Province Bylaw No. 4/2007. A bird lover as well as a politician, he duly registered his 11 pet birds in front of the press on 24 January 2007.[188] Appointed by President Suharto in September 1997 for five years, and re-elected for a further five in 2002, Sutiyoso had previously been Jakarta's military commander, and prior to that an internationally trained soldier who had served in Aceh in 1978, and East Timor in 1975, as a commander in the *Kopassus* special forces. In 1994 he was named 'Best Military Commander in Indonesia', and his handling of the May 1996 and July 1997 riots in Jakarta, when he was military commander of the city, as well as the more wide-scale and bloody events that forced Suharto's resignation in May 1998, was regarded in government circles at least as 'efficient'.[189] With a governorship

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[186] Jakarta Post, 2 December 2006

[187] Hartono, chairman, Poultry Product Marketing Information Center, quoted by Antara, 18 January 2007. Available at: http://www.highbeam.com/doc/1G1-157885853.html [accessed 14 June 2010]

[188] These included two yellow-crowned bulbuls (*Zey Lanicus*), four grey turtledoves (*Geopelia striata*), one white-rumped shama (*Copsychus malabaricus*), two thrushes (*Turdus* sp.), one bekisar (*Gallus* sp., a cross between a fowl and a jungle cock) and one *pelung* (a subspecies of red junglefowl). Source: Jakarta Post, 25 January 2007

[189] 'Sutiyoso: Anti-Nepotism and thuggery', Tempo (undated). Available at http://www.tempo.co.id/ang/pro/1997/sutiyoso.htm [accessed 15 March 2011]

that encompassed five presidencies, and remaining well connected to the Suharto family,[190] in the post-1998 *Reformasi* era, Sutiyoso became best known for the introduction in early 2004 of the TransJakarta busway system and its subsequent expansion (Lo, 2010), the 2005 *Langit Biru* ('Blue Sky') programme, which addressed Jakarta's air quality problems by obliging the city's municipalities to organise a car-free day every month, and banning smoking in many public places, zealous and sometimes violent slum clearance (Human Rights Watch, 2006), and a widely ridiculed bylaw shortly before he left office in 2007 banning public begging.[191] Grander intentions that saw less expression included plans for underground and monorail mass transit projects, triple-decking roads, and a coastal reclamation programme.

These ambitions are easily portrayed as modernist ('high-modern' in James Scott's terms) and rooted in the centralising and self-serving *pembanguan* development ideology of the Suharto era. They matched those of President Yudhoyono, also a retired soldier, who was sworn into office in October 2004, and who had served under Sutiyoso. For both men, visible order in the capital, *Ibukota* (Mother city), was arguably of higher importance than the detection, control and elimination of the virus, and given both men's histories, maintaining public order in the city was paramount. The scavenging chickens that were to be seen on practically every street in the capital before the regulation simply did not accord with their ideas, or ideals, of a modern capital city. An international diplomat interviewed said:

> The capital is what the president sees, where he lives, and where he drives about. If he doesn't see any chickens on the streets, and if there are no deaths reported in the city, his interest level [in H5N1] is not going to be that high.[192]

Recognising the complexities of implementation, Jakarta's Animal Husbandry and Fisheries Agency had acknowledged early that the market restructuring plan would take time due to the numbers of businesses involved, which were then estimated to employ over 22,000 people. 'We can only remove domestic breeders this year,' the head of the agency said. 'We hope that slaughterhouse owners will voluntarily remove their businesses to the designated areas'.[193] The scale of the commercial issue was then set at approximately 600,000 chickens arriving daily at some 1,200 'legal and illegal' slaughterhouses in the city, with 'hundreds' of chicken and duck breeders operating within the city limits. The markets were also identified

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[190] Bambang Trihatmodjo, Suharto's second son (and Bimantara chief executive) was prominent at Sutiyoso's inauguration in October 1997, and Siti Hardiyanti Rukmana, aka Mbak Tutut, Suharto's eldest daughter and then DPP Golkar chairman, backed his bid for nomination as a presidential candidate in October 2007.

[191] 'New bylaw not that funny: Activists', Jakarta Post, 4 October 2007

[192] Interview, Jakarta, 28 August 2008

[193] Source: 'Time running out for city's backyard birds', Jakarta Post, 18 January 2007

early as a particular challenge. An official in the Jakarta city administration, charged with overseeing the city's markets said:

> We feel that the present trade practices and the conditions in the markets are no longer suitable with the development of the city and its people. It is not just that we often find bad hygiene and sanitation in the market places, and we think that these bad practices could cause health problems, both in humans and in animals, but we also often find forged documents, bad measurements, unregulated additives and gangsters (*preman*) in the markets.[194]

For the civil servants charged with implementing the plan, then, as well as their political leaders, responding to the H5N1 virus had quickly extended into dealing with crime and delinquency that threatened government control and order. Furthermore, as the issue stretched beyond the markets into hundreds of slaughterhouses and wet markets spread out across the city, many varied interests were to be affected by the new regulations. Patrick and Jubb (2008:11) identify at least 16 different types of stakeholders in the Jabodetabek conurbation: companies, poultry shops, contract producers, non-contract producers, large collectors, small collectors, sub-brokers, live bird vendors, small, medium and large slaughterhouses, carcass vendors, egg producers, household consumers, commercial consumers, and traditional healers (who use raw eggs in their products). All these groups have different interests and concerns, and all were to be affected by the new regulations.

Having indicated the scale of the issue, and the underlying constructions of modernity that motivated plans to address it, this chapter moves on to discuss the perspectives of the groups which would be most affected by the new regulations, moving along the supply chain from the markets, slaughterhouses and consumers, through those involved with broking and transporting, to the farms. First, however, the perspectives of the integrated conglomerates are discussed. If they put their influence and financial muscle behind the restructuring plans, the situation would be significantly different.

7.4 Commercial imperatives

The interests of the integrated companies, concerned largely with feed and DOC supply, have been discussed in some detail in chapter 6. It may be recalled that in late 2003 these groups had been accused of using influence to delay the official government announcement of H5N1 detection, and that in their 2009 Annual reports the two largest companies stress that their operations had not been affected by H5N1, other than by 'reduced public demand and consumption of poultry products'. In the intervening period, the companies had shown

[194] Interview, Jakarta, 21 December 2009

themselves to be self-sufficient and remote from regulation. A senior industry figure gives a candid insider's view:

> We have breeding farms. They are very important assets so we massively protect them from AI. Obviously we have an interest to prevent AI, and if it happens, we have to prevent it spreading. So, we stop it by bio-security. But sociologically, where AI attacks is not only the loss of poultry through death, but also the fear of people of consuming poultry products. It more inflicts a macro loss related to consumers avoiding poultry products, than a micro loss related to the death of poultry caused of the disease as such. […] At the end of 2003 we can see the effects of the AI attack from reduced feed consumption, and the DOC absorbed in the market. This definitely influenced the poultry industry. Its loss was not because of decreasing poultry production, but because of decreasing of demand of the poultry and its derivative products. The people were scared of buying poultry. It was assumed that eating poultry causes AI in humans.[195]

In private, industry actors present a different story from that they present publicly, acknowledging the virus and the lengths they go to control it. As has also been noted in chapter 6, the integrators rarely lose directly in financial terms in the case of poultry death during the growing period on the farm, or during transport, and they construct H5N1 risk in commercial terms, associated with decreased consumer demand for poultry meat. In this they present a hybridised construction of the H5N1 risk. As highly technical producers, with valuable stock and a reputation for healthy birds to protect, they have moved significantly to secure their own premises and eradicate the virus from them. As business operators, they recognise the reaction of consumers when faced with food perceived as dangerous, and do not disregard the reaction as unscientific and irrational.

Concerning the city's ambitions to restructure the supply chains, routing them through a set of new, industrialised slaughterhouses, complex political and cultural matter related to trust complicate what might be a relatively simple matter of capital finance and construction. Few industry actors have any trust in DKI Jakarta's agency and are 'watching and waiting' to see how the development of the new slaughterhouses plays out. An industry executive tells a familiar story:

> There is no economic incentive for companies to invest in slaughterhouses because live birds are the preferred commodity in the market, and in any case slaughtered birds do not sell at a higher price.[196]

Furthermore, few individuals in the industry believe that the local government actually has the technical or political competency to implement the restructuring plans, and further complications are associated with engaging with it. An international consultant explained:

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[195] Interview, Ancol, 13 January 2010
[196] Interview, Jakarta, 8 February 2010

> If the big groups are too active, the small companies will complain they are taking over. There is also the bureaucratic complication of having to deal with the Jakarta city administration, and for the administration to be seen to be dealing transparently with commercial entities. And then, if there is a mess up, and there are big companies involved, the big companies will be blamed by everyone.[197]

There is evidently little trust involved in these interactions, either between private sector groups, or between private and public sector groups, and the private sector simply does not want to be involved. This suits the public position of the corporations, which, as has been discussed, ranges from outright denial of any problems associated with H5N1, to an enthusiasm to play the issue down in public. Accepting the need for new structures and systems in the supply chain would involve recognising H5N1 as a problem, which does not suit their interests. As has been discussed in chapter 6, their operations are currently highly profitable and they see no need for change.

7.5 Markets and consumers

Jakarta's wet markets range widely in scale from single-storey corrugated-iron roofed structures housing less than one hundred stalls, to large multi-storey reinforced concrete structures dating from the 1970s with far greater numbers of traders. Some 151 of the officially recognised 350 or so larger markets are owned and managed by PD Pasar Jaya, an enterprise of DKI Jakarta established in 1966, as part of President Suharto's development plans. The majority of these properties now appear stained and run-down. Fresh fruit and vegetables are sold in one area, clothes, plastic goods and other durables in another, and generally as far as possible from heat and daylight, meat and fish are sold in adjacent areas, with the poultry vendors having dedicated locations backing on to a slaughtering area.

Pasar Rumput in Menteng Atas, close to the centre of the city, is one such site. Live broilers arrive from around 1am to 5am seven days a week in plastic crates containing 15 - 20 birds stacked on small pick-up trucks. The crates are carried by hand to a second floor where they are stored outside a dimly lit slaughtering room. Taking up to six birds at a time by hand, the slaughterer then cuts the throats of the birds, bleeds them into a stone basin, and scalds them in a gas fired tub of boiling water before putting them through an electric powered, rubber fingered, defeathering machine. The birds are then eviscerated, with the giblets being deposited in one plastic barrel, and the carcasses into another water-filled barrel next to the door to the sales area. Retailers then carefully arrange the carcasses on tiled tables facing the market area, feet in the air, heads hanging off the table to show a gaping cut in the throat. This

[197] Interview, Jakarta, 3 December 2009

indicates slaughter as part of an Islamic *halal* regime, which many consumers profess to be important.[198]

As in the integrated companies' offices, on the farms, and amongst the brokers and traders in the supply chains, enquiries in Jakarta's markets as to the presence or the effects of *flu burung* (bird flu) are unwelcome. One Indonesian researcher, involved in a government-sponsored study of the markets, told me of being physically threatened and forced to leave one market in central Jakarta, along with his companions.[199] Even the most tentative questions are almost uniformly met with the response: 'Look at me. I work with poultry every day and I am fine'. When asked why they do not wear gloves and masks, many traders say it would 'scare off customers'.[200] An acknowledgement can sometimes be teased out that there was a problem in the past on farms, affecting birds, which decreased consumer demand in the markets, but the notion that the disease can be transmitted to humans is widely denied. This scepticism extends beyond the markets, into the scientific community. One interviewee said:

> As a chicken farmer and even as a veterinarian I have a big question mark about AI. I agree AI is a zoonosis, but why are there no cases among the poultry sector players who are in daily contact with poultry? If it is transmitted through direct interaction, the collectors in Pulo Gadung should be the first to be infected. Imagine how many hundred thousand chickens come there every day. We know that some of these birds carry the virus. But the fact is that no workers there have been infected by AI. What can we do? We can't change this fact.[201]

The requirements of customers in wet markets such as Pasar Ruput vary according to the time of day, with the earlier (4am to 5am) customers often being the proprietors of small restaurants or food stalls, or secondary retailers who remove one or two dozen carcasses in buckets to sell from carts they push around the neighbourhood, or other shifting locations. Later arriving customers (5am to 8am) are more typically householders, or their staff, who purchase one or two carcasses, often butchered, for domestic consumption. A market stall can expect to move hundreds of chickens per day, and see themselves as being in competition with other smaller traders, with a typical capacity of 20 - 40 birds per day, who slaughter in their own homes, or who purchase carcasses at distant slaughterhouses, and transport them by motorcycle to informal stalls on the fringes of the markets where they pay no market fees.

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[198] *Dhabiha* slaughter as part of an Islamic *halal* regime requires the slaughterer to be of sound mind, to say a prayer before killing each animal, and for the animal to be killed with a swift incision cutting the jugular vein and/or carotid artery with a sharp knife. The objective is to bleed the animal as fast as possible, the understanding being that blood is unclean and may be harmful.

[199] Interview, Bogor, 22 July 2010

[200] Interview, Jakarta, 5 June 2009

[201] Interview, Bogor, 31 January 2010

Many traders suggest that the new regulations go against their customers' wishes. A market trader argued:

> Why should the slaughterhouses be clean and sophisticated while the buyers do not demand it? For them, the most important thing is that the chicken I sell is guaranteed for its legality of *halal*, and that can be proved by looking at the way it was slaughtered. Do not misunderstand, the buyers know which chickens have been slaughtered today and which not. They are very suspicious that a chicken may not have been freshly slaughtered. Even if the chicken is just chilled, they will usually ask for a lower price.[202]

The need for the bird to be, and be seen to be, fresh is unarguable, but the trader's argument given above is to a degree disingenuous. Although his produce, and that of every other stall, has neat slits on the neck indicating that it has been bled to death, no customers have actually seen the birds they buy being slaughtered, rarely has a prayer been said before the act, nor has any assessment been made of the mental competency of the slaughterer, or the sharpness of the blade. Unlike the kitchen areas of many large and small eateries, which are deliberately on display, the slaughtering areas in the markets are hidden, invisible places. No customers inspect them, and the trader's customers are satisfied by his assurances. So strong is the trust relationship that the trader interviewed, like many other merchants of poultry and other goods, charges returning and established customers a higher price. The price is not fixed and new customers are likely to be offered a discount. This trust relationship stands in contrast with the lack of trust evident in relations with government officials. The trader also points to another widely raised issue:

> Hygienic chicken slaughtering can only add to the cost. This is a big problem for my customers. Are these new slaughterhouses going to slaughter for free? Suddenly, slaughtering becomes big company business. Are we going to benefit in the markets? I don't think so. Why should my customers pay for something they don't want? Again the big people make a big gain and lots of little people make a little loss. Why should we accept this?

It should also be noted that this trader, like most vendors in his position, does not commonly trade in the premium free-range *kampung* birds, and the highest prices will go to the few such birds which are to be found alive in cages towards the periphery of many markets, to be slaughtered, plucked and butchered on the spot, or for any of these operations to be conducted at home. This is the ideal routine for most customers, but given that the cost per bird is around double, it is usually reserved for special occasions.

The market traders, then, and the workers in the slaughterhouses which are often integrated with them, are most threatened by the proposal for the new slaughterhouses, and

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[202] Interview, Depok, 27 January 2010

by the rapid rise of supermarkets and hypermarkets across the city where increasing numbers of consumers are shopping. For special occasions, consumers will – one way or another – seek out *kampung* chicken, ideally alive. For the market traders, the governor's modernist ambitions towards progress and order threaten their livelihoods and their social identity. At night, in the gloom and heat of the market slaughterhouses, I often thought of coal mining, and the feeling of loss many miners felt as the industry mechanised and declined in the UK in the 1970s. With only a tiny number of human H5N1 cases, however, very few people – workers or consumers – in the markets, construct the risk of H5N1 as being related to human health. Instead, a cultural, commercially orientated construction dominates, with the need to maintain consumer confidence seen as paramount. Traders therefore downplay or deny any risk associated with the virus and highlight routines such as *halal* slaughter. A poultry slaughterhouse worker said: 'At the end, it is money. If we choose to calculate risk, it is lower to the slaughterer because we hold the living chicken for only a day'.[203]

7.6 Harvesting and broking

Some very detailed studies of poultry market chains in Indonesia have been accomplished,[204] but none examine the important role of the 'brokers' or 'middlemen' (*tengkulak*) who provide access to distant markets for farmers, and financial liquidity for farmers and market traders. Many varying forms of commerce, contract and arrangement exist in the chains, but an industry executive summarises a common pattern in the supply to Jakarta from West Java and Lampung, in south Sumatra: 'The chickens are sold to brokers whilst they are still on the farm. Collectors then arrive who move the birds to the traders, and then they are sold live to the retailers'.[205] Noting that less than five per cent of production currently passes through established slaughterhouses, he suggests: 'In this chain it is the broker that has the power, and few companies want to get involved here'. The same admission is made by everyone else in the chain: farmers, collectors, distributors and retailers. Brokers, who operate in other areas of Indonesian agriculture such as vegetable farming, provide vital liquidity, and hold considerable power. As the distributors lack capital to pay farmers for the market-ready birds, they obtain a Delivery Order (DO) for a certain number of birds (usually of certain weight) signed by a broker to give to a farmer. Collectors – often agents or staff of the distributor – will then take the

[203] Interview, Bogor, 2 February 2010
[204] See for example: *Poultry Market Chain Study in Bali* by Made Mastika (FAO: OSRO/RAS/602/JPN) and *Poultry Market Chain Study in North Sumatra* by Albiner Siagian, Philipus Sembiring, Zulfikar Siregar, Ma'ruf Tafsin, Nevy Diana Hanafi, Rasmaliah, Dwi Suryanto, and Rosdanelli Hasibuan (FAO: OSRO/INT/501/NET). Neither study is dated.
[205] Interview, Ancol, 13 January 2010

birds from the farm to a marshalling yard, or to a market. In the meantime, the brokers will have paid the nucleus company which actually owns the birds that have been removed, or assured it that it will be paid. In the absence of commercial banks, brokers can charge high prices (Charnoz and Forster, 2011). This does not endear them to anybody in the chain. A representative of an independent farmers' organisation summarised the relationship:

> Everyone has an emotional relationship with the brokers […]. We all pretty much hate them, but we can't live without them. First, there is money. The brokers have a huge capital to cash flow farmers. They can easily get a lower price than other buyers because they pay in cash and the payment process is fast and smooth. This makes the nucleus businessmen prefer doing business with the broker.[206]

Of particular concern for disease control is the fact that few farms are cleared at harvest in one shipment. A far more common procedure is for a number of distributors to remove a few hundred, or a few thousand, birds at a time, delivering them to a market or a collecting yard, and possibly collecting more from the same, or a different farm, on the same day. Birds may leave a farm uninfected but mix with infected birds at a collection point before being moved down the chain to the market. The trade may also transport the virus from farm to farm, or introduce it into farms from infected markets, when transport vehicles return from them. In conditions of oversupply, however, as long as people keep eating chicken, the brokers loose nothing from sporadic H5N1 infection, and – like the integrators – have little incentive to address the issue on farms or in the market chains, although, as indicated by the elderly farming couple discussed below, many farmers look to them to provide technical inputs and expertise. Like the integrated companies, and the farmers, this group constructs H5N1 risk purely as a commercial matter, intimately related to news media reports and public concern regarding the poultry they eat. An interviewee said:

> The broker does not care [about disease] at all. Unlike a slaughterhouse that has access at most to two cultivators, the brokers can access all cultivators so they can take an advantage over all cultivators. The brokers have cleverly made this situation themselves.[207]

In the context of this thesis it is relevant that the brokers exist outside the control of government, and are remote from regulation. Modernity for these groups, constructed as regulation, taxation, and intervention by authority, would be unwelcome. Similarly, modernity in the shape of the arrival of commercial banking, would have a significant and detrimental effect on their activities. Unlike the rest of the industry, which has a complex, formal set of associations, the brokers have no associative structure, and operate locally, within areas agreed with other brokers, generally running 'portfolios' of five to 15 farms. In the countryside,

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[206] Interview, Bogor, 31 January 2010
[207] Interview, Bogor, 2 February 2010

however, everyone knows who they are. At a small farm, or near to it, the question 'who buys the chickens around here?' is almost inevitably answered with the word the 'boss' (in English) or 'Boss Agung' ('Boss' followed by a name). Directions will lead to his house, which is usually closer to a metalled road than the farms, and is often substantial, offering a significant contrast in prosperity to the simplicity of the dwellings of the farmers. Just like the poorest farmers however, the brokers commonly deny having had any experience with avian influenza in their area, and often claim to be surprised that it is even being suggested.[208] Their operations are currently profitable and they see no need for changes, especially those that would involve a disruption of their current routines. The modernity represented by the new slaughterhouses therefore presents a greater threat to these groups than sporadic disease outbreaks. Like the market traders, modernity in this domain is not constructed as progress, order and freedom from disease, but the possibility that they will lose power, and that their role will become redundant. Such consequences of the new regulations may not have been peripheral to the thinking of the authorities that proposed them.

7.7 Growing meat

Fundamental to poultry farming in Indonesia is that fact that poultry prices fluctuate widely and farmers see little profit as there is overproduction. A farmer, and the director of a nucleus supplying contract farms, elucidates:

> The very highest risk on the farm are fluctuating prices, and market and farm gate prices which are often far below the production price. For example, the production price, as today, reaches Rp13,000 (around US$1.3) per piece, while the farm gate price is only Rp8,500-9,000. Under these conditions, the small farmers who do not have financial support resources are not able to survive. In one [28-day growing] period, if a farmer raises 10,000 chickens, he will meet a loss of Rp40 million (around US$4,000). For small farmers, such an amount is huge because they have no financial support from any bank, and the enterprise is entirely private.[209]

This bleak analysis is repeated on farms across western Java. A representative of a contract farming association said:

> Since the 1998 multi-dimensional crisis […], the cultivation of poultry in Indonesia, especially broiler and layer chickens, has experienced very critical periods only because the price of chicken has fallen dramatically. Disease is not the problem. […] The problem is the price the farmer is paid.[210]

Whilst the large industrial scale feed and DOC suppliers prosper, as do the intermediary brokers, most farmers involved in growing meat struggle to survive economically. As discussed

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[208] Interviews, Majalengka, 17 October 2009
[209] Interview, Bogor, 29 January 2010
[210] Interview, Bogor, 31 January 2010

in chapter 6, farmers carry the financial losses associated with disease and mortality, but rarely do they have the technical capacity to deal with it themselves. Instead they depend on what is often a patrimonial relationship with the person or organisation they are contracted to. The risk constructed around the H5N1 virus, and indeed any other poultry pathogen, therefore hybridises. As will be seen below, the risk constructed has less to do with any bio-medical definition, and more to do with the relationship between the farmer and the contractor.

Like many farmers, an elderly married couple who keep about 1,700 broiler chickens in a bamboo-walled, tile-roofed 15 by 8 metre coop immediately in front of their house, which is made of similar materials, in Jatirangga, a village in Bekasi, on the south-east fringe of the Jakarta conurbation, suggest that avian influenza (*flu burung*) has never occurred on their smallholding. 'The only disease we do not have is bird flu', the woman said.[211] Raising chickens is the household's main source of income, and is primarily the woman's responsibility, as the man 'is not strong any more'. The chickens are not their property but belong to the 'boss',[212] whose workers provide feed and visit daily to check the condition of the animals and administer vitamins and other 'medicines'. According to the woman:

> My status is only as a labourer. I am Mr Harno's [name changed] coolie (*kuli*). I just feed the birds twice a day and clean the coop. This means I take out dead birds in the morning and sometimes spray for lice that might be eaten by the chickens. The most important thing is that the coop does not have a stinging smell. I make sure there is coal in the heater too because the little birds must stay warm, and there are lights for them at night. I am not a clever person and I am lucky to have a job at my age, especially one where I can stay at home and look after the children. This is just like caring for lots of little babies.

From Harno's workers she knows that the symptoms of avian influenza are similar to *tetelo* (Newcastle disease) and that the birds will die suddenly, within one day, and in large numbers. She is worried about the disease, but says: 'What can we do. It is business. We need the money. We have to keep going. We have no choice.' She has seen television news items about avian influenza in other areas and has heard, but does not believe, that it can affect humans because: 'I have never seen anyone infected by anything from a chicken'. According to her, not eating chickens that have died of disease and washing hands after handling birds are the most important means of ensuring that chickens do not make humans ill. 'I have learnt this from television,' she says. Her husband disagrees with her analysis: '*Tetelo*, bird flu, they are the same. All the chicken diseases that can cause death, these are bird flu. People in this village used to say "*tetelo*". Now they say "bird flu"'. This conflation of H5N1 avian influenza and

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[211] Interview, Bekasi, 31 October 2009

[212] The woman's term, in English, to a female Indonesian interviewer speaking a mixture of Indonesian and Sundanese, the prevalent local language.

other poultry diseases has been noted previously. For this couple, like many others raising poultry, a purified bio-medical diagnosis of any disease means little. For them, risk is constructed as any mass mortality of poultry, irrespective of the pathogen.

The couple also keep about six free-range *kampung* chickens, which are sold in a nearby market when cash is required, and eaten by the family on special occasions. Literally translated, the woman says that these birds 'refresh her eyes'. As for many, there is a sentimental, emotional relationship with poultry birds. In the last year, there have been two occasions when there has been illness and death among these chickens. Each event saw about half of them die. The dead birds were variously buried and given to a neighbour to feed to his catfish, farmed in a small purpose-built commercial pond. According to the woman, the birds died of *tetelo*:

> The birds were depressed, lost their appetite and then started sneezing. When they started snoring I knew that they would die in two or three days and I took the healthy ones to the market straightaway. There is no medicine for *tetelo* and I know that it can rub off on other chickens. I have tried giving my sick chickens *bodrex*[213] pounded and mixed in water, but it had no effect. Death of chickens due to disease is a must and often occurs. There is nothing I can do.

At the time, she was not concerned about the commercial broiler chickens becoming infected as, in her opinion, *tetelo* does not affect them (it is probable they are vaccinated against ND), although she suggests they are more susceptible to diseases because 'they are not as strong as *kampung* chickens which walk around all day'. Her husband adds that the *kampung* chickens are also stronger because they have a different and more varied diet, which they have to find themselves. In the last year, deaths have occurred among the broilers due to gumburo (Infectious Bursal Disease) caused by 'heat stress', according to the woman, and *berak kapur* (*Salmonella Pullorum*).

In each case, the infections were detected and treated by Harno's workers. The farming couple obviously understood well what was afflicting the birds, but lacked entirely the means to deal with the infections. In these circumstances, the power dynamics between the contractor and the contracted become key. The woman's use of the term coolie (*kuli*) is indicative. Her responsibilities are tightly defined and in the event of a disease outbreak of any kind, extend only to informing the contractor. The risk for such farmers is that the contractor will withdraw support, either regarding a specific outbreak, which will cause a financial loss to the farmer, or on a longer term basis, with the result that the enterprise ceases, with doubt cast doubt on the husbandry practices of the farmers. The risk constructed around H5N1 for

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[213] A widely available paracetamol-based painkiller marketed for human use.

such farmers therefore extends beyond individual outbreaks, and temporary financial setbacks, to a sudden and permanent removal of their livelihood. Yet few contracted farmers have any control over any of the processes that might introduce disease into their smallholdings. When the birds are harvested after 28 days on the smallholding described above, for example, the common pattern is followed of brokers paying the contractor directly with agents arriving at the smallholding to take 200 - 300 chickens each under the supervision of the contractor's workers, who check the paperwork and count the number of birds removed. Never, according to the woman, is the coop cleared in one operation, and dozens of trucks arrive at harvest time, each one of them a potential vector for the virus. 'I am not a sophisticated person,' says the woman, 'and I am not a business person. I cannot take responsibility for these movements. I am just grateful for what I can get'.

On such farms as this, the markets of Jakarta feel very distant, although Pulo Gadung, the site of one of the largest new slaughterhouse is only 12km away. Similarly, the modernist constructions of progress and order behind the new regulations and plans seem to belong to a different world. The household has no motor vehicles or telephones (fixed line or mobile), water is drawn from a well adjacent to the house, and the farmers tell a common story of the difficulty of accessing the free, or subsidised, medical services to which they are entitled. Risk seems an alien concept in such circumstances. The farmers appear to have little control over the future and little power to affect change. The unfortunate politics of their relationship with their contractor means that the virus and the disease is unlikely to be addressed unless the contractor acts, and as discussed there is no incentive for the contractor to do so. Here, the issue of controlling H5N1 appears to relate little to the virus as a purified bio-medical matter of science, and entirely to the domain of politics, power and culture.

7.8 Plans awry

In due course, as the April 2010 deadline approached for the implementation of the 2007 bylaw, the city council recommended that the administration delay the plans. Not all of the new facilities were ready. Slaughtering capacity was estimated only to provide for some 300,000 birds per day, with demand accepted as being well over over 600,000. The Rawa Kepiting site was most advanced with 70,000 of a proposed 100,000 bird per day capacity available, but at the end of March 2010 it was reported to be processing less than 2,000 chickens per day, with only one machine with a capacity of around 750 birds per hour in

operation.[214] Development of the other sites was also reported to be behind schedule. Industry observers pointed to further limitations of the infrastructure: poor roads to the facilities, irregular electricity supplies, the lack of refrigerated, or even closed, trucks to move the carcasses to the markets, and insufficient supplies of styrofoam boxes and ice. The modernist ambitions of the governor (now retired) had not been matched by any modernist ideal of efficiency in the city administration. As one senior academic put it:

> The transformation from hot chain to cold chain is not as easy as turning the palm of the hand, and it has to be asked what competence does the city administration have to implement and sustain such a programme. They are meant to look after the roads, refuse disposal, public transport, but look at what happens – or doesn't happen – there. This does not generate much confidence.[215]

An industry executive said: 'Based on the facts on the ground then it is prudent to delay the implementation of Government Regulation No. 4/2007 for at least one more year, until most of the facilities to support the policy could be available'.[216]

Aside from the lack of progress in developing the new facilities and related infrastructure, the market traders were also objecting to the plan and had gone public with their dissatisfactions, holding widely reported weekly demonstrations outside the city hall. As was discussed in chapter 4, democracy and the power to protest are involved in lively constructions of the modern in post-Suharto Indonesia. One event on 15 March saw over 1,000 participants led by the head of the Jakarta Poultry Traders' association, who claimed that the livelihoods of 64,000 traders and 75,000 employees were at risk. An international consultant working on the project pointed to some of the concerns:

> Even at Rawa Kepiting, where traders are being offered free electricity and water, take up is low. There is some understanding of the imperative, especially by traders in central Jakarta, and sooner or later there will be a rush, but right now there's very little demand. For many, it is impractical, or inconvenient, to travel to the new facilities and some doubt that there is work which matches their skills with the slaughtering knife in the new, largely mechanised plants.[217]

A poultry broker expanded on the latter issue:

> You have to understand that the workers and the merchants in the markets have traditional lives. They have a trade and most often they are just doing what their fathers did. They are poor and feel threatened by this initiative. They do not know any other work, they are not ready for change, and I'm sure it will not run.[218]

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[214] Source: Jakarta Globe, 17 March 2010
[215] Interview, Depok, 20 January 2010
[216] Drh Sudirman, chairman, Animal Feed Manufacturers Association of Indonesia. Quoted in Trobos, 1 March 2010. Available at: http://www.trobos.com/show_article.php?rid=22&aid=2140 01 [accessed 24 June 2010]
[217] Interview, Jakarta, 3 December 2009
[218] Interview, Bogor, 30 January 2010

Other interviewees suggest that the noisy, and politically successful, demonstrations of the traders signify wider concerns they have relating to the pace and direction of change. In Indonesia, particularly in large conurbations, and especially in Jakarta, the mushrooming of large hypermarkets, and thousands of smaller supermarkets, is threatening the wet markets' trade and role. The proposed changes to the poultry marketing chains therefore do not just threaten the livelihoods of the poorest people all the way through the poultry meat supply chain, but also threaten their social identity – the customs mentioned in the proverb quoted at the head of this chapter. The chapter now considers the very different effects the new regulations had on households, compared with commercial actors.

7.9 Personal effects

Compared with the manifold challenges the city administration has faced in implementing the sections of Regulation No. 4/2007 concerned with restructuring the commercial poultry supply chains, the sections banning unregistered domestic bird-keeping in the metropolitan area have had a significant effect. According to press reports and accounts from the time, thousands of people across the city registered their birds, killed and ate them, or presented them for culling. On 21 January 2007, approximately 10,000 birds were killed in Mampang, South Jakarta, most being returned to their owners to be cooked and eaten.[219] On 2 February, Governor Sutiyoso officially led a cull in East Jakarta, with over 1,000 birds being handed over, and the head of the Animal Husbandry and Fishery Agency reported that over 100,000 poultry birds had been presented for culling in the run up to the deadline.[220] By the end of 2007, 37,902 certificates for 203,320 pet birds had been issued.[221] There were complaints however. 'Why should healthy birds be culled?' was one common question. Like the farmers, and the market traders, many householders pointed to the fact they had kept birds for years and had not been sick. Others complained about the lack of compensation for healthy birds culled, arguing that: 'if the administration forces us to slaughter the birds, they have to give adequate compensation'.[222]

In fact, the 'sweeping' campaign that was designed to detect and destroy scavenging birds in the city was slowed and then brought to a premature conclusion by floods that

[219] 'City begins mass culling', Jakarta Post, 22 January 2007
[220] 'Jakarta launches sweeps to find backyard poultry', Jakarta Post, 1 February 2007
[221] 'Minister asks for end to city poultry farming', Jakarta Post, 6 February 2008
[222] 'Backyard farmers reluctant to end lives of birds in prime', Jakarta Post, 17 January 2007

followed heavy rain beginning on 2 February.[223] Nevertheless, the 'backyard bird ban' has dramatically reduced the number of birds seen on Jakarta's streets. Chickens, which used to be a common sight everywhere in Jakarta, are now rare. Transect walks and searches can find them – scratching around alongside the canal 100 metres east of the US embassy, for example, or kept in small numbers by families on the edge of Menteng Atas and many other poorer areas. Similarly, any moves towards the fringes of the city, westwards towards Tangerang, or southwards towards Depok and Bogor, turn up increasing numbers, but significantly fewer than before the decree.

In their explanations of this effect, interviewees point to two factors. One was the significant concern regarding H5N1 infection amongst many in the population who did not work with poultry. In early 2007, Indonesia's laboratory-confirmed H5N1 death toll was 61, the highest in the world, with the Jabodetabek region experiencing the bulk of human cases and deaths, all of which were widely reported in the media. At that time, the number of cases was perceived to be trending upwards. In January 2007, four people had died of confirmed H5N1 infection in Jakarta and Tangerang, and stories of an unusual cluster of cases among a family in Karo, North Sumatra in May the previous year, which were seen by many as evidence of human-to-human transmission, were being repeated, together with suspicions related to two other smaller clusters in Banten and Surabaya in September. One interviewee, a south Jakarta resident, said: 'People have forgotten now, but we were all frightened at the time. We did not know that the disease would not explode everywhere'.[224]

The other factor echoes a major theme of this chapter by pointing to the lack of any significant commercial interests in the small scale or hobby poultry keeping that was occurring in the capital, and the fact that in Jakarta's expanding economy, the poor who previously might have supplemented their income through small scale poultry keeping, had other options. The same interviewee explained: 'What did we have to lose? People want a clean and tidy city. [...] We don't need chickens here, and I told my neighbour that and he got rid of his birds'. In Jakarta, modernist ambitions towards control and order, such as Sutiyoso's plans, are not unpopular as long as they affect no livelihoods and no one has to pay for them. As was explained to me on a number of occasions: '*U.U.D. – Ujung ujungnya duit*' (It all boils down to money).[225]

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[223] By Wednesday 7 February some 340,000 Jakartans had been forced from their homes, more than 225,000 were homeless, and over 50 people had died, mainly by drowning or electrocution. (Jakarta Post, 8 February 2007)

[224] Interview, Jakarta, 15 March 2009

[225] Interviews, Bogor, 6 August 2010 and Jakarta, 4 September 2010

7.10 Conclusion

This chapter has argued that new regulations in Jakarta concerning commercial poultry supply chains and domestic poultry keeping, which were introduced with modernist centralising intentions, relate more to authoritarian notions of order and progress in the capital of an aspiring and rapidly developing nation, than to disease control. These ambitions in themselves therefore conflate social matters of culture, power and politics with a purified bio-medical conception of the virus. In fact the case powerfully illustrates H5N1 risk constructed as a bio-medical threat being deployed to suit the interests of governmental rationality by way of justifying an intervention to impose a modernist construction of order through regulatory control, intervention and enforcement. In this case, little reliance is placed on scientific knowledge as expert and authoritative.

The new regulations have been shown to be unwelcome and to have been largely disregarded by commercial actors, whilst having a significant effect amongst urban households with no commercial interests. This is explained by an analysis that suggests that in both commercial and domestic domains, social, cultural and political dynamics are involved in constructing hybrid risks associated with the H5N1 virus that have various relations with its status as a bio-medically defined threat. The most powerful commercial actors – the large integrated companies and intermediary brokers – are currently prospering, and see no need for change. They also doubt the city government's competence and ability to administer the new regulations. Among these groups, the most significant factor hybridising H5N1 risk constructions is the need to maintain profits and share prices, often for distant offshore or institutional groups. The authority of these groups is also threatened in that they are accustomed to operating independently of government regulation or control.

Among the many people working in markets, slaughterhouses, and throughout the complex poultry supply chains feeding Jakarta, practical everyday experience conspires against the disease control rationale given for the new regulations; and the authority, competence and intentions of the city administration are in doubt here too. The H5N1 virus has only been transmitted to a tiny number of people, and those working with poultry every day do not consider the health risk to be significant. In the markets and the small slaughterhouses which are often integrated into them, H5N1 risk also hybridises, most significantly incorporating the threat to livelihoods resulting from drops in consumer demand for poultry that follow media reports of H5N1 outbreaks. In avoiding this, everyone in the supply chain shares an interest with the most powerful commercial actors in suppressing discourse about the disease, even to the extent of denying its existence. The risk constructions of those working in the markets, and

existing slaughterhouses, also hybridises in that the new industrialised slaughterhouses threaten livelihoods, and challenge matters of social identity associated with professional and established practices. If the plan succeeds, the lives of many people will change radically as a result of externally imposed values.

Few poultry farmers have any significant influence over their production methods, and even less over subsequent marketing processes, and, outside the city's boundary, have largely been ignored in the restructuring plans, although they suffer the economic effects of H5N1 infection most badly. For poultry farmers, poultry disease and mortality is an everyday fact of life, and little distinction is made between H5N1 and other lethal poultry pathogens. In these circumstances farmers, which it must be stressed operate on a wide range of scales and in a wide variety of styles, generally have little option but to align with the hybrid risk constructions of the commercial marketing networks, and, with their own livelihoods and social identities threatened, to deny, or downplay, the existence of the H5N1 virus as a specific bio-medical threat – to people or to poultry – in order to maintain consumer confidence and poultry sales.

In the end, as the modern proverb presented above suggests, it all boils down to money, and confidence amongst Jakarta's consumers, exchanging money for meat in wet markets, supermarkets, on the doorstep, and at restaurants and food stalls, is crucial but variable. Remote from the commercial concerns of the poultry market chains, and highly sensitive to media reports relating to the existence and potential effects of H5N1 as a pathogen threatening humans, their erratic purchasing behaviour has probably had the greatest effect on mixing social dynamics with bio-medical constructions to create risk hybrids. If their consumption did not spectacularly drop when H5N1 made news headlines, the impetus to suppress H5N1 discourse by all commercial actors would be significantly reduced, and a major barrier to addressing the disease would be removed. In this, deep fears can be seen mixing in with the H5N1 risk hybrids, most prevalently among an urban population now with little experience of live poultry. Fear similarly played a significant role in the social dynamics involved with the broad acceptance, and neighbourly enforcement, of the regulations prohibiting unlicensed domestic poultry keeping in the urban area, which cost nothing to adopt, threatened few livelihoods, and offered a construction of the modern that was attractive to an aspiring urban population: a city with fewer scavenging chickens.

8. H5N1 Surveillance

> 'The ten most dangerous words in the English language are "Hi, I'm from the government, and I'm here to help."'
>
> Ronald Reagan (1911 - 2004), Remarks to Future Farmers of America, 28 July 1988.[226]

This chapter examines the extensive animal health surveillance system that was developed in Indonesia from 2006 onwards, specifically focused on detection and control of the H5N1 virus in so-called 'backyard' or household settings. Founded on, and driven by a scientific rationality, as the system extends through a complex bureaucratic apparatus into populations with extensive experience of poultry disease and mortality, social, cultural and political factors are shown to inhibit reporting, or other forms of contribution, and to work against the objectives of the system. Although H5N1 diagnosis is determined by a highly specific test, the technically orientated implementing organisations are themselves demonstrated to be driven by hybrid constructions of modernity and risk that incorporate explicit pro-poor agricultural development objectives, and less clearly accepted internal cultural, political and social dynamics.

The first section outlines the importance of surveillance in technical approaches to infectious disease control, and sets the background for the development of the surveillance system. The entwinement of surveillance with post-Enlightenment constructions of modernity is noted, together with the potential political consequences of assigning 'protective' functions to any institutions. The second section details the rapid growth of the extensive, globally linked surveillance system, and describes the difficulties that arise when a response function, most often in the form of uncompensated culling of infected and uninfected birds, is linked to surveillance activities. In these circumstances, the risk constructed around the H5N1 virus becomes linked with disease control interventions, rather than the effects of the virus itself. The third section demonstrates the detailed knowledge related to avian disease of those living with poultry, which the surveillance system largely disregards as a consequence of a science-based rationality that takes account only of quantitative technical test results. The fourth section examines the social consequences of poultry disease, which is common in the countryside, and the fifth section describes in detail a surveillance and response event, demonstrating that in implementation the system is more flexible than its designers intended. A sixth section argues that a science-based framing excludes grounded knowledge, and works

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[226] Source: http://www.reagan.utexas.edu/archives/speeches/1988/072888c.htm [accessed 20 November 2011]

against notions of wider, systemic surveillance. In conclusion it is argued that a purified science-based construction of H5N1 risk, that determines the virus to be an object of nature, separate and remote from people and politics, proves to be untenable not only amongst the people affected by it, but also amongst those charged with attempting to implement projects based on such an approach.

8.1 Numbers and norms

The US Centers for Disease Control and Prevention (CDC) defines public health surveillance as:

> the ongoing, systematic collection, analysis, interpretation, and dissemination of data, including clinical signs and symptoms, laboratory test results, and prevalence of behavioural and attitudinal risk factors, [which] epidemiologists use to detect outbreaks, describe patterns of disease transmission, evaluate prevention and control programs, and prioritize future health-care needs.[227]

Surveillance is therefore fundamental to a technical risk management approach to disease control, which gathers and analyses data on disease outbreaks, and deploys resources with the intention of limiting the spread of the disease, or eradicating it. Data on the incidence of a pathogen in space and time are central to designing control measures and assessing response efforts, and can be considered to depend on a highly purified approach to nature and scientific measurement of it. Simply put, science determines whether the pathogen is present at any location, or not, and cultural matters are deliberately excluded.

In Indonesia, Element 3 of the comprehensive December 2005 National Strategic Work Plan (Ministry of Agriculture, 2005), as outlined in chapter 6, was defined as 'Surveillance and Epidemiology'. Closely linked with the development of laboratory services (Element 4), legislation and enforcement (Element 6), and the implementation of a national communications campaign (Element 7), and with an indicative budget of US$38.7 million over three years, Element 3 of the plan involved the development of a national H5N1 HPAI surveillance system from the ground up. This was initially referred to as the Participatory Disease Surveillance (PDS) project, and later as Participatory Disease Surveillance and Response (PDSR) project. As will be seen, this nomenclature stands as both rhetorical and ironic: 'participatory' in name, from the outset the project was driven by modernist, rationalist centralising values.

Instigated, developed and managed by the FAO, based in a dedicated new unit in the Indonesian Ministry of Agriculture, and funded most significantly by USAID, this was to grow into a large and ambitious enterprise which, as well as recruiting, training and equipping over

[227] Source: Access Science. Available at: http://accessscience.com/content/Animal-disease-surveillance-and-monitoring/YB061390 [accessed 3 March 2011]

2,000 field-based animal health surveillance officers, included developing a definition of a suspected HPAI outbreak, distributing rapid H5N1 test kits to all districts and sub-districts, establishing systems to collect and transport samples to diagnostic laboratories, and developing data templates, standard operating procedures for investigations and data entry, and a central, nationally networked database (ibid:10 and 29-33). As discussed in chapter 6, the objectives and design of this system were driven by international technical norms and standards, which followed the CDC definition given above and focused on detecting a purified bio-medically defined H5N1 virus. A senior FAO official based in Jakarta said: 'Never forget that PDSR was largely imposed on Indonesia. It was a donor led process. There was a lot of donor pressure. There was an atmosphere of emergency'.[228]

The resultant database in Jakarta was to be linked to FAO/OIE regional diagnostic and surveillance networks, which, as discussed in chapter 4, were already extensive, and were undergoing rapid development and expansion as a result of the emergence and global spread of H5N1. In particular, at the time, the FAO, OIE and WHO were building up to the joint launch, in July 2006, of the Global Early Warning and Response System for Major Animal Diseases including Zoonoses (GLEWS) initiative, which was founded on three components: tracking and sharing information of major animal disease threats, risk assessment, including epidemiological analysis and assessment, and providing access to prediction and prevention studies and models.[229]

The development of the H5N1 surveillance system for Indonesia can therefore be seen, despite its 'participatory' title, to be founded on reductive risk management principles which depend on a highly purified conception of the virus as a matter of nature being assessed and measured by science. Implicit to the enterprise was the creation of an extensive organisational apparatus which was designed not only to detect the H5N1 virus on the ground, but also to feed into a global system which ultimately reported to Rome, Geneva and Paris. In the specification of the system, and in its operations, there was a clear distinction between regional, national, and international centres of control and analysis, and peripheral disease investigations in the field. Therefore the Indonesian H5N1 surveillance system serves as a powerful example of globalisation operating in multiple directions. The system was designed both to move technical norms and standards from the centre to the periphery, and to move disease incidence data from the periphery to the centre.

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[228] Interview, Jakarta, 11 November 2009
[229] Source: www.glews.net [accessed 14 December 2010]

In such technical conceptions, surveillance is a relatively straightforward matter, but on the ground, as will be discussed below, this purified modernist framing is challenged. As discussed in chapter 2, Foucault would predict this. Famously introducing surveillance as a key symbol and a driving force of the post-Enlightenment project, Foucault linked the process with the growth of rationalist technological perspectives, modernist administrative mechanisms, capitalism, and governmental rationality. He also explicitly considered surveillance in the context of 'biopower' concerned with practices associated with public health, risk regulation and the need to encourage healthy behaviours. As will be seen below, assigning 'protective' functions to any institution, such as those associated with the H5N1 surveillance system, which are assumed to be required to 'secure the welfare of the population, the improvement of its condition, the increase of its wealth, longevity, health etc.' (Foucault, 1991:100) does not necessarily lead to the consequences intended.

8.2 Participation or politesse?

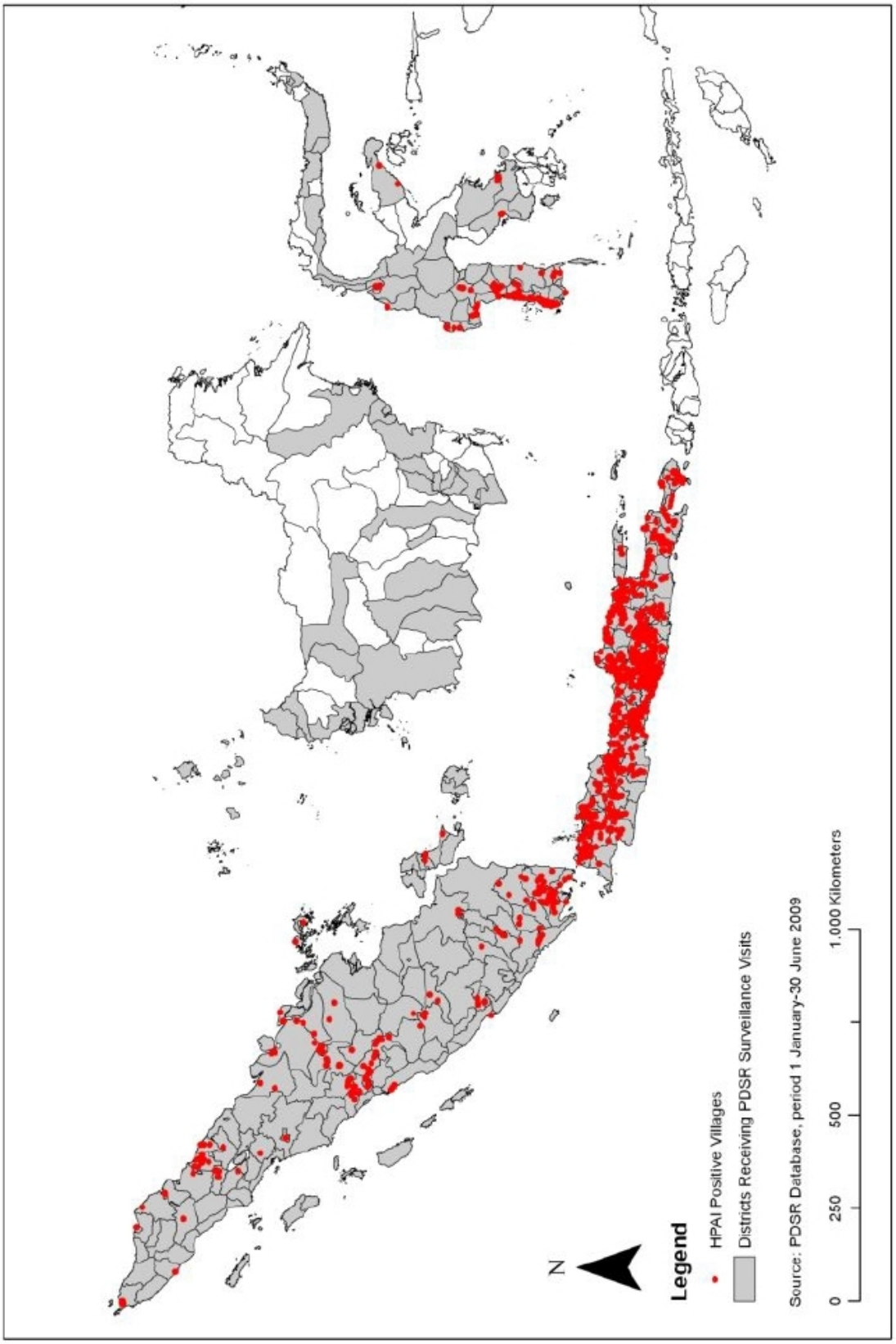
The Participatory Disease Surveillance (PDS) programme that was introduced into Indonesia in early 2006 to fulfil the requirements of Element 3 of the NSWP was based on a methodology originally developed and used in Africa by the FAO to address the problem of rinderpest in cattle. Given the then limited knowledge of the extent of HPAI in poultry, the pilot phase of the programme focused on detection and control in so-called 'backyard' (household) settings. At its core was a qualitative approach termed 'participatory epidemiology', which was based on conventional epidemiological concepts but which made use of local knowledge to formulate programme objectives, gather data and intelligence, and analyse information (c.f. Mariner and Roeder, 2003). It drew on established techniques of participatory rural appraisal (Chambers, 1983; 1994) with the objective of empowering stakeholders and producing disease control programmes that were both acceptable and effective. Methodological approaches proposed included semi-structured interviews, focus group discussions, and a variety of techniques such as the creation of maps and seasonal calendars. Such an exercise is described in chapter 9. Four pilot studies were initially run in four Local Disease Control Centre (LDCC) locations across three provinces in Java, involving 52 local government livestock services officers. These studies immediately produced results: the first quarter of 2006 saw 54 positive HPAI cases reported (FAO, 2009:25). This led to a significant and rapid scaling up of the programme. USAID extended its support with an additional US$4 million up to May 2007, with AusAID and the Japan Trust Fund also contributing. In September 2007 the project was extended until May 2008 with US$11 million of USAID support (from June 2007), and moves began then to

combine surveillance and response roles to create the 'Participatory Disease Surveillance and Response' (PDSR) format (ibid:27). Response actions potentially included focal culling with and without compensation, application of bio-security measures (including cleaning and disinfection), poultry confinement and movement controls, vaccination, and communication activities. As will be shown below, this response role has significantly complicated and compromised the surveillance objectives of the system by introducing potent social factors into H5N1 risk constructions amongst those living with poultry in the countryside.

PDS/R personnel were either recruited on fixed term contracts, or existing, often animal health-related, civil servants were engaged and provided with an additional daily stipend for their extended roles. Many officers therefore had a technical background, and significant training and operational support was provided as the programme grew rapidly. By May 2007 the programme covered 159 districts on Java and Bali and two provinces in Sumatra, and by mid-2008, 2,112 officers, including 353 qualified veterinarians, were operating in 27 of 33 provinces across 331 of Indonesia's 448 districts. From January 2006 to September 2008, over 177,300 surveillance visits were conducted, 6,011 outbreaks were detected in 324 districts, and over two million poultry farmers and community members were engaged with (ibid:69). In October 2008, the project was extended further to May 2009 with an additional US$7.5 million of support. In this period, a new IT system was introduced and, relatively late in implementation, from December 2008, activities were extended into the commercial farming sector. The size and extent of the programme is further illustrated by the numbers of central office staff. In May 2009, 15 international and 60 national staff were employed centrally by FAO in Indonesia, with a majority of them supporting the PDSR programme.[230] In all, the financial costs were also significant. FAO field delivery in Indonesia from 2005 to May 2009 totalled over US$31 million, of which about US$23 million (74 per cent) was spent on the PDSR programme (ibid:23). According to the FAO, PDSR officers visited more than 20,000 villages in the twelve months up to June 2009, detecting HPAI in over 6,800 villages (ibid:32). Figure 9, below, shows the extent of the PDSR programme in the first half of 2009, together with the location of HPAI positive cases detected marked, conventionally (on the original) for such risk mapping exercises, in red.

[230] Interview, Jakarta, 11 November 2009

Figure 9: Districts with PDSR surveillance visits and cumulative HPAI positive cases (1st January - 30th June 2009).



Source: FAO, 2009:32. Data from the FAO/CMU epidemiology team.

In principle, supported by awareness campaigns in the national and local media, PDSR teams visit villages to meet with community leaders and poultry farmers, with the objectives of gaining trust and understanding historical and active poultry disease. When active outbreaks are encountered, the teams have rapid antigen tests available to confirm HPAI, and with support from the affected community, infected birds are subsequently culled and disposed of, infected properties disinfected, movement controls implemented, and the local medical authorities contacted so that human surveillance might also be accomplished.

The rapid antigen test is key to the detection of the H5N1 virus and consequently central to the entire surveillance enterprise. Opinions vary as to the accuracy of these tests but given that a definitive isolation test – culturing the sample in a medium – usually takes a laboratory seven to ten days, and that facilities for the more rapid Polymerase Chain Reaction (PCR) tests, which can take only two hours, are scarce, the so-called 'rapid test kit' is widely deployed. The principle is similar to some home pregnancy tests. Chen et al. (2008) offer an evaluation of accuracy.[231] Most commonly the process involves taking a swab from the throat of a dead bird, or a sample of its excretions, and inserting it into a hole at one end of a credit card sized device. Within ten minutes, one or two red lines will show, one line is a control – to indicate that the test device is functioning – and the other is a positive indication. If such a test shows negative, the PDSR officers will simply drive away. If it shows positive, a process may begin that will see the seizure and destruction of all poultry in the vicinity. In these circumstances, it is hard to see the 'participatory' element in the programme as anything more than a rhetorical softening of a top-down governmental rationality that offers few benefits to the citizens under scrutiny. Participation here, arguably, has more to do to with educating and informing people with a view to engineering support, than giving them power to shape events (Arnstein, 1969). Similarly, on a scale that runs from total control by the agency in charge to a full transferral of authority and responsibility to other stakeholders (Pimbert and Pretty, 1997), the PDSR system, at least as defined in its standard operating procedures, leans heavily towards control by the agency in charge.

Adding a response function to a surveillance function, then, has complicated the project significantly. With PDSR interventions potentially leading to the uncompensated culling of infected and uninfected birds across a wide area, a construction of H5N1 risk has emerged

[231] There are two types of influenza rapid diagnostic tests: a well type, in which a diluted specimen is dropped into a well and the reaction occurs inside a covered plastic body; and a test strip type, in which the test strip is dipped into a diluted specimen and the reaction occurs on the strip. Compared with more reliable virus culture tests, the overall prediction rate of rapid tests are typically given as 96.5 per cent, with false positive rates at 0.5 per cent and false negative rates at 17.9 per cent.

among household and smallholder poultry owners that is unrelated to the death of birds by disease, and unrelated to any of the wider implications for global human health that has driven the international response. For many people living in the Indonesian countryside, the greatest risk associated with H5N1 is the arrival of uniformed government officers on a culling mission. One interviewee, a hobby poultry keeper who generally kept around ten chickens said:

> What is most worrying about keeping poultry in these days is the arrival of public health inspectors who may visit my house to exterminate my birds. There is nothing I can do. My birds may be healthy but I cannot protect them.[232]

Even when faced with chickens that have died suddenly, another more commercially orientated keeper with 40 birds said:

> I never reported my dead chickens to people, especially to government workers […]. Many chickens were killed by force, although they were not positively affected by the virus. This made me feel lazy to report. Why can an officer kill just because he thinks the chickens have the flu?[233]

This situation would be different if compensation for culled birds was reliably forthcoming. Compensation is critical to reporting, but complexities associated with disbursement and reimbursement mechanisms, and the moral hazard associated with payment for infected birds, has limited its use in Indonesia. This challenge is recognised by some of those working within the programme. One of the officials involved stated, not without irony:

> Are the villagers supposed to participate by reporting events that will see their poultry culled without financial compensation? Is it participation when you help to destroy your own and your neighbours' chickens against your will?[234]

In their surveillance excursions amongst poultry smallholders, Indonesia's animal health officers are challenged by a number of factors. First, as has been discussed in chapters 6 and 7, chicken disease and mortality are so common that they rarely cause significant concern. The sentiment, as expressed by one interviewee, 'Death of livestock due to diseases of chicken is a must and often occurs', is ubiquitous, so common that it is the subject of a nursery rhyme.[235] Second, whilst poultry disease and mortality cause financial loss (sick and even dead birds can be sold, but at a lower price), rarely is this loss catastrophic as poultry usually represents only a part of smallholder household income. Third, HPAI is only one of a number of poultry diseases, several of which can cause extensive mortality, and, as been discussed previously, even experienced veterinarians accept there it is impossible to make a reliable diagnosis without a laboratory test. Symptoms of HPAI may include coughing, sneezing, fever,

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[232] Interview, Medan, 4 November 2009
[233] Interview, Medan, 3 November 2009
[234] Interview, Padang, 22 February 2010
[235] Interview, Bekasi, 31 October 2009

swollen heads, depression or diarrhoea, but birds often die so rapidly that no clinical signs of disease show. The rapid death of large numbers of birds, a blue colouration (cyanosis) of the comb and feet, a swelling of the head, and discharges from the eyes and beak can give some indication, but are not conclusive. In these circumstances, a risk construction related to uncompensated culling introduces a range of social, cultural and political forces that complicate and even confound the purified objectives of the implementing agencies, and the supposed binary simplicity of the rapid test. The fact is that if a 'participatory' report results in a culling operation affecting neighbours, or the village as a whole, not many of them will be made. In circumstances where factors such as social solidarity and social cohesion come to the fore, few people would seek the approbation associated with making such a report. Similarly, uncompensated culling operations bring complex cultural and political matters into play associated with the power and authority of those deciding whether to cull, how extensive it should be, and other practical matters of enforcement.

As will be discussed in the next section, there is a fine grained and sophisticated understanding of poultry disease amongst those who live in the countryside where the PDSR programme has focused. One consequence of the culling response, and the related construction of a hybrid H5N1 risk, involving cultural matters which include the historical relationship the Indonesian population has with the processes of government and the officials that represent it, has actually been to suppress this grounded expertise. Startlingly for example, despite the difficulties veterinarians report in diagnosing HPAI without a test kit or a laboratory, some four out of five suspect cases reported by the population to the authorities have proven positive when rapid antigen tests have been deployed. Most PDSR activity has involved teams making 'active' excursions to search for the virus in areas nominally determined to be 'at risk'. This type of activity represents 92 per cent of all visits, with only 8 per cent of excursions being 'passive' or 'callout' responses, when teams respond to specific calls to investigate suspect outbreaks (FAO, 2009:6). This corresponds with the widespread unwillingness to report possible outbreaks as discussed above. Nevertheless, active surveillance is reported to have detected only 5.6 per cent of cases, as compared with 'callout' responses which detected 94.4 per cent of HPAI cases (ibid:34), with the positive diagnostic rate for 'callout' visits during the period April 2008 to February 2009 being 80.4 per cent, compared to 0.2 per cent for scheduled visits (ibid:54). In other words, poultry owners in the countryside know very well how to identify HPAI, but the unwillingness of the technical agencies that are implementing the project to acknowledge 'unscientific' expertise, means this grounded knowledge finds little expression or use.

8.3 Public knowledge

There is therefore widespread knowledge of poultry diseases amongst all manner of professional, semi-professional and hobbyist poultry keepers in Indonesia, but this is largely ignored in a purified approach that only takes account of technical test results that have validity in a quantitative, empirically based risk management approach. The processes of purification amongst the scientists and technicians result in a disregard for any knowledge that is not scientific. For the PDSR project, science has defined the virus, and scientific evidence is the only authority valid in the justification of policy action (c.f. Wynne, 1996). A binary positive or negative determined by an accredited test kit in the hands of a trained operator is required to put a (red) dot on the risk maps in the agriculture ministry in Jakarta, and those in Geneva, Paris and Rome. Grounded local knowledge is often bypassed or ignored because it can involve categories and concepts that do not easily correlate with precise bio-medical definitions. In Indonesia, where Ethnologue.com[236] lists 737 living languages, the languages and the terminologies of poultry diseases vary widely. *Bahasa Indonesia* (Indonesian) has been the official, unifying, national language only since 1945, and only a small proportion of the population use it exclusively. At home, and within local communities, local languages are used on a day-to-day basis. Even within the relatively small area of West Java, at least five languages are commonly in use. One recent study in West Java (conducted in Indonesian with translation into English) found over half the interviewees mentioning diseases other than HPAI (*flu burung)* and Newcastle disease (*tetelo*) by name, and using more than ten unidentified terms in local languages, including *eluk, cekok, nguluk, punun, sakalor, ngung, kotelo, toun, ayan, entuk,* and *lentuk* (Snell, 2009). In many cases, the study found, HPAI was confused or conflated with other diseases. Interviewed as part of the research for this thesis, a smallholder farmer in West Java said:

> The first disease is *tetelo*. This frequently attacks chicken. The hallmark of this disease is that chickens look depressed, lose their appetite and show strange behaviours such as making choking noises and running around aimlessly. After a few days a chicken that has these symptoms will die. The second disease is gumboro. The hallmark of this disease is cough and usually it attacks broiler chicken. The third disease is *berak kapur*. This can quickly spread to other chickens unless you change the drinking water and the food often. Another disease is *patek*. This is caused by mosquito bites but does not cause death. I know of avian influenza [*flu burung*] from television but it has the same characteristics as *tetelo*. Perhaps all the deadly diseases are the same as avian influenza. When we used to say *tetelo* perhaps now we have to say *flu burung*. In short

[236] See: http://www.ethnologue.com/show_country.asp?name=ID [accessed 4 May 2010]

> it is all bird flu now… but what is the difference? The death of chickens is a common thing in the chicken farm.[237]

A similar story is told by a specialist breeder of exotic poultry keeping around 100 birds in East Java:

> Formerly avian influenza was called *aratan*… It came and went like a kind of wind, but nowadays there are so many clever people it is called bird flu [*flu burung*]. It came originally from a human who was stricken by influenza and who then infected his chickens. Formerly when a chicken did not fall ill but died straightaway, we called it *aratan*.[238]

From the same area, a different interviewee, one of a married couple keeping 25 – 50 birds reports:

> Before there was this avian influenza issue, villagers here called the incident – the death of chickens in a large number – *aratan*. Verbally, *aratan* does not have any clear meaning, it should just be understood as a chicken disease which can spread to large numbers of others quickly. Now we have learned to call it bird flu [*flu burung*]. I suffered it myself. I bought a chicken from the market which was infected. I know this for sure because the next day it was dead together with all my chickens. But I knew that the eggs would not be infected. So I saved the eggs and sold some of the dead birds cheaply and cooked and ate the rest. Chickens infected with *aratan* are not dangerous to be eaten immediately. This is what people in former times usually did if their chickens were infected with *aratan*.[239]

Other respondents have a more precise understanding of the symptoms of HPAI. One keeper with around 25 birds said: 'The symptoms were similar to the information on TV. The suffering and dying chicken showed blue skin and died in a sudden moment'.[240]

Factors related to the air, the weather, and changes in the weather, the season and the climate are often suggested to be related to poultry disease. Most respondents identified the rainy months (November to March, roughly) as seeing peaks in outbreaks of all sorts. One respondent said: 'Chicken disease usually happens in the rainy season. Then there are many chickens which are cold and not in a fresh condition. In the dry season chickens are nimble and more healthy'.[241] It might have been expected that this is exactly the sort of knowledge that the 'participatory' disease surveillance project would have captured and made use of. In fact, over two years of data gathered from the PDSR programme were required before the analysts in the Ministry of Agriculture were prepared to advance a similar conclusion based on the data presented in Figure 10, below.

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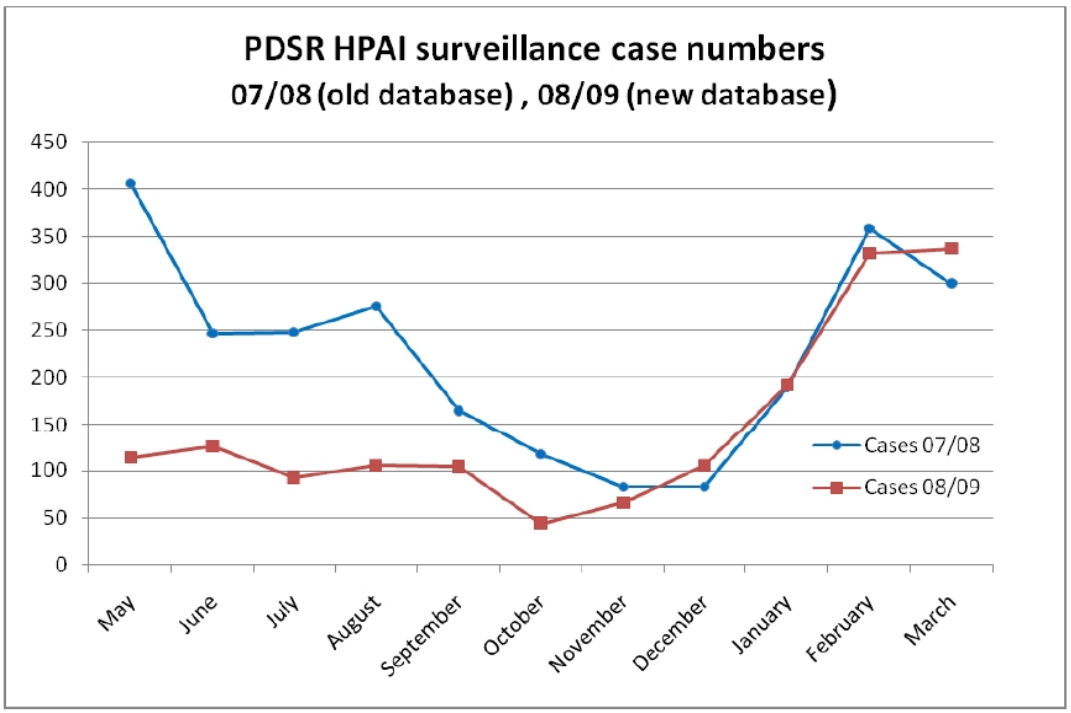
[237] Interview, Bekasi, 8 November 2009
[238] Interview, Surabaya, 3 November 2009
[239] Interview, Mojokerto, 16 October 2009
[240] Interview, Airlangga, 9 November 2009
[241] Interview, Jombang, 21 October 2009

Figure 10: PDSR HPAI surveillance case numbers May 2007 - March 2009.



Source: FAO, 2009:36 Fig. 6. Data from FAO/CMU epidemiology team.

An international virologist summarised thinking early in 2010:

> There is more known now about the peak in of cases we see regularly in the rainy season. Rain, water and flooding have now been identified as risk factors and significant vectors of H5N1. The fact is that the virus is probably transmitted in water. This is why there are more cases in Jakarta. There is a growing understanding that people were barking up the wrong tree when they were most concerned about poor people living day-to-day with poultry.[242]

Again it can be seen that the technical response, supposedly participatory, failed to capture and consider grounded local knowledge as a result of its insistence on applying a purified science-based approach.

This local knowledge also extends to how medicines can be used to treat poultry disease. Medicines appear to fall into two main categories: human medicines (non-prescription drugs, and prescription drugs acquired without prescription), and natural substances. The general understanding is that chickens will respond to medicines in the same way that humans will. Often human tonics are given, which are understood to aid health, growth and egg productivity. These include branded products such as *Hemaviton* (a multi-vitamin) and *Extra Joss* (an energy drink, marketed to men). At other times more medically orientated treatments

[242] Interview, Jakarta, 9 February 2010

are given in response to illness. These include *Bodrex* (an acetaminophen-based cold, flu and headache remedy), *Insto* (a disinfectant for eyes), *Mixagrip* (a paracetamol-based cold and flu treatment), *Super Tetra* (a tetracycline antibiotic), and *Amoxicillin* (a penicillin antibiotic). Pills and tablets are usually ground up and mixed with water for the birds to drink.

Natural or herbal remedies include ginger, which is crushed, infused in boiling water and then dripped into a bird's beak from a cloth, galingale (also a rhizome from the ginger family – *Zingiberaceae*), tumeric, and garlic which are pounded and added to poultry food. *Terasi* (a condiment made from pounded and fermented shrimp or small fish) is also administered, often mixed with chilli. Respondents talk of using such remedies to 'warm the chicken's body up'. Red chilli, *puyung* pepper and red onion are also used, either forced into a bird's mouth, or its anus. These are most often spoken of as 'shock' treatments which 'make harm to the body so that it can heal and be healthy again'.[243] Some respondents also spoke of preventative measures against disease. One spoke of a paste he makes and puts on chickens legs.[244] Others spoke of cages or fences they made to prevent their chickens mixing with their neighbours', and moving their chickens using a *tolak or angkringa* (a long carrying pole with bamboo cages on each end). Many spoke of the need to keep cages and the environment clean and free of chicken faeces. Another spoke of 'ordering' his chickens to sleep on a tree at night when the disease season approached: 'If they slept in a tree it was rare for them to be stricken by diseases. The disease is on the ground and if they are more than a metre above it they are better protected'.[245]

Grounded knowledge can then be seen to cover, in its own terms, many of the interests and concerns of the scientists and technicians directing and implementing the H5N1 response. Unlike the scientific knowledge however, this 'local' knowledge is dynamic – it is not fixed and it can change – and hybrid, mixing concepts and approaches that draw on bio-medical conceptions as well as less 'scientific' practical experience. *Aratan* is a case in point. Widely understood at least in East and Central Java as term relating to sudden and extensive poultry mortality, it is now expanding to incorporate what science refers to as H5N1. Similarly, as the remedies used for poultry illness indicate, many Indonesian poultry keepers use bio-medical pharmaceutical products more-or-less interchangeably with 'natural' homemade ones. There is little inhibition towards the deployment of a technical, scientific approaches and methods. However, even putting the complications of uncompensated culling to one side, or

[243] Interviews, Majalengka 17 October 2009 and Airlangga, 9 November 2009
[244] Interview, Bantul, 24 October 2009
[245] Interview, Airlangga, 9 November 2009

the stigma associated with calling in the authorities, a purified risk construction, focused on the binary results of an H5N1 rapid test, is unlikely to garner much support. Sudden and extensive poultry mortality is a persistent problem that needs a wider and more flexible definition and response than that determined by a reductive scientific rationality. As discussed in the next section, whilst Indonesian poultry keepers are not averse to technical interventions, the politics that often accompanies them inevitably complicate, and often confound, a purified response that does not acknowledge such effects.

8.4 Cultural factors

Respondents suggest that they usually inform their neighbours if they have an unusual number of chicken deaths. Apparently there is little stigma associated directly with poultry disease or mortality, which everyone in an Indonesian village, it would seem, can expect sooner or later. Some respondents talk of social solidarity: 'We are all poor people here and we must help each other'.[246] Others mention that it is very difficult to keep anything secret in a village. Very few respondents claim they report to the head of the village, or their office – the *RT* or *Rumah Tangga* (house with steps). As mentioned above, there is a common fear of the culling of healthy birds with no compensation, but social matters go beyond that. One respondent said:

> The thing to do is to tell the neighbours but not to tell the RT, although they usually find out. They don't want to know. If they do, they might have to make an official report and that will reflect badly on them.[247]

Essential to Javanese culture is not creating problems, especially for those more powerful. Another respondent said: 'When the disease season comes, people usually tell one another but do not tell the head of the village'.[248] The same principle, of course, relates to any possible upwards referrals from the RT to the *Dinas* (provincial animal health office), and reports of interventions by animal health officers vary. Some claim never to have encountered them. 'For help-giving, illumination and medical treatment to chickens, there have never been officers in this village, not from the government or from other institutions like campuses, although we have called for them,' said one respondent.[249] Others tell the opposite story:

> Immediately after the epidemic attacked my neighbour's chickens, all of mine were injected quickly and at no cost. The officials had been asked to come by the village administrator. They walked around the village home by home injecting infected

[246] Interview, Bantul, 24 October 2009
[247] Interview, Bekasi, 8 November 2009
[248] Interview, Airlangga, 9 November 2009
[249] Interview, Mojokerto, 16 October 2009

> chickens and also healthy chickens. But that injection was done just at the moment, and after that it was never done anymore.[250]

In another area, a respondent reports:

> At that time the village government had officials brought in who sprayed and injected those sick chickens. This has been done twice in two years in every home whose chickens were sick. Before that, socialisation had been done by the village government who told that there would be injections to chickens free of charge.[251]

And in another area:

> Every time the chickens get sick we had a discussion and someone went to the *Dinas* to tell them. The first time they came to the village quickly. They killed and burnt some chickens and sprayed disinfectant. Then it happened again and they were not so fast. They were getting bored. The response got slower and slower… The people wanted to cure the sickness themselves but they did not know how. We had to wait for the department to come and they only came maybe one week after the outbreak. Then they just gave injections if any chickens were left alive. The people knew there was something wrong but they did not know what to do. So we just had to wait and after a day or two all the chickens were dead. Then we dug holes under the trees. We could still use the carcasses as fertiliser. We did not burn them. How would we make the fire? Petrol or kerosene would cost money.[252]

It is suggested that if healthy chickens are not threatened by culling by officials, few villagers appear greatly concerned by the arrival of surveillance teams. In conversation, those with children are far more exercised by the cost and quality of schooling, especially for senior high school students. Similarly, the provision of human health services, and the cost of them, is a perennial subject. Under a decree issued by the Health Ministry in 2008, more than 76 million low-income people are entitled to receive public health insurance under the *Jamkesmas* programme, but their identities and addresses must first be validated by local administrations. In many areas this is happening only slowly. One respondent said, ironically:

> It would be impressive if the government cared as much about the health of the people as they did about the health of chickens. If extension workers can go from door-to-door talking about poultry diseases, why can't they do the same making sure that those who are entitled are registered for *Jamkesmas*? This shows the injustice of the government to its citizens. Why should we take their AI talk seriously when they don't take our health seriously?[253]

Yet again a purified vision of science, which the veterinarians and animal health officers, as well as the entire surveillance programme both depend on and promote, runs into the complexities of culture, power and politics. PDSR is just one, relatively recent, of many government interventions to arrive in the Indonesian countryside. As discussed in chapter 5, in

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[250] Interview, Jombang, 21 October 2009
[251] Interview, Mojokerto, 18 October 2009
[252] Interview, Bantul, 24 October 2009
[253] Interview, Medan, 3 November 2009

phases of the colonial period, and following independence, various development projects, agricultural and otherwise, were promulgated, often with stated objectives of supporting the rural poor, but in this respect the government record stands as tarnished and self-serving, especially in the wide-ranging and extensive poultry farming sector. In the countryside, the risk constructed around H5N1 inevitably incorporates such factors, hybridising a purified scientific ideal. The next section of this chapter considers in detail an intervention by a PDSR team, which similarly demonstrates the impossibility of separating a purified scientific rationality from the complexities and compromises of politics and power.

8.5 PDSR in action

Having accomplished fourteen interviews with national and international personnel concerned with the PDSR project in the Jakarta headquarters office, and with a greater number of reports in hand from the countryside, some of which included reports of provincial government animal health officers in action, apparently as part of the PDSR project, I felt it was necessary to spend some time investigating the project on the ground from the perspective of those charged with implementing it. My three formal applications to the HPAI Central Management Unit (CMU) at the Ministry of Agriculture in Jakarta, however, were not responded to, and a greater number of requests through informal channels were similarly unsuccessful except, eventually, to elicit an informal explanation that 'outside researchers are not welcome in disease investigations'.[254] Eventually, I did manage to experience PDSR in action in Padang, West Sumatra in February 2010. I was a beneficiary of Indonesia's decentralisation legislation, which meant that West Sumatra's provincial animal health services operated largely autonomously, and I had the advantage of having met with both the province's heads of animal health, and of human infectious diseases, as part of the UNICEF project I was previously engaged on, which is discussed in chapter 9.

Subsequently, around noon on Monday 22 February 2010, during the course of a map-rich presentation at the earthquake-shattered animal health headquarters in Padang, one of the officers looked up from her Blackberry. Over the weekend, sudden poultry death had been reported at three households in a hamlet about 100km away. A neighbour of one of the affected households had made the first report on Saturday, and two other householders had called the local animal health office on the Monday. One household had lost eight birds, another ten, and the third, four out of six. A PDSR team had visited that morning and two tests on two birds (i.e. four tests) at two locations had shown positive. The team had burnt the birds

[254] Interview, Bogor, 6 August 2010

and the coop at one site, and disinfected the coops at two other sites, where the householders had reported burying the dead birds. Another bird had just died, which also had shown a positive test result. The caller wanted to know what should happen next. It was decided that this was a good opportunity to visit and show an 'outsider' PDSR in action.

On the way to the hamlet, we called at the regional animal health office to pick up two uniformed officers (one with a Global Positioning System), two bottles of disinfectant ('as a gift'), and a non-uniformed 'facilitator' who knew the location of the hamlet and some of the people there. By the time we arrived at the first house reported to be affected, we were a convoy of three cars and two motorcycles, and a small crowd gathered, made up of children mainly, on the other side of the narrow, unmetalled road. We were an unusual sight. The expedition's mission was to 'socialise' the dangers of avian influenza, to decide whether a ring cull around the infected sites was required – they were within 100 metres of each other – and to try and get a picture of how the infection had arrived at such a remote location.

On the porch of the iron roofed, concrete floored farmhouse, we were conventionally offered seats, but it was obvious we were not particularly welcome. No drinks were provided, and our gift offering was not taken out of sight, but was removed from a low table to the floor. Both were unusual, even pointed, transgressions of etiquette. Initially, the women did most of the talking. The householder told the two female officers that her neighbour (who had called in the event) had put down rat poison deliberately to kill her chickens so she could report the deaths and tarnish her reputation. 'Why else would she make the call?' was her logic. Less dramatically, her husband, a vegetable farmer, told of a mid-sized broiler farm about 1km away, which the village had suspected of being responsible for a die-off of some 400 birds owned by a small independent farmer in the village a month or six weeks ago. This had not been reported for fear of the farmer 'loosing face' and becoming upset, but trucks did pass the house going to and from the broiler farm, the householder stressed. Sometimes feathers and faeces fell from the trucks, which he thought should use another road and not pass through the village.

This seemed a viable explanation to the officers, but an hour or so later, having wandered as a group around the smallholding and inspected the charred ground where the small coop had stood, another story emerged. On the previous Friday, a relative of the family had returned from Lampung (a province in south Sumatra) bringing a live chicken with her as a gift. It was described as 'plump and healthy' and had been kept in a cage close to the house to protect it. However a dog had upset the cage and killed the chicken, eating some of it before being discovered and chased away. Feathers and intestines had been spread all over the yard,

which was on the route between the house and the infected coop. This was a more convincing tale for the team. They were keen to explain to me that Lampung has many broiler farms and is well connected to the supply chains into and out of Jakarta and western Java. This was grudgingly accepted by the smallholders, who, it is suggested, saw a local source, outside their control, as a more attractive explanation. In accepting that the virus had travelled with their relative's gift, they may have seen themselves as bringing the misfortune on their own heads. By way of comparison, the notion that the virus had come from outside their territory was an attractive explanation to the officers. One of them described to me at length how badly the rest of Indonesia was affected by avian influenza compared with West Sumatra, and how determined 'smugglers' were in attempting to bring all manner of products to West Sumatra, which is relatively prosperous, including poultry.

The leading officer had also come to a decision. With infection at three sites, and a virus from Lampung, a ring cull was required together with widespread disinfecting. The local facilitator was dispatched to get an announcement made over the nearest mosque's loudspeaker system. A meeting would be held in an hour, before the evening prayers. In due course, ten women, eight men and 15 children arrived to sit on the floor in a line opposite the seven-strong animal health team, which had been joined by two paramedics who had arrived in an ambulance. The Imam, sitting centrally with the health team, opened with a prayer, and the leading officer then offered a 25-minute speech, building up to the announcement that the culling and burning of all the chickens in the hamlet was to occur the day after next, on the Wednesday. A series of questions followed, all but one asked by the men. Will the eggs have to be destroyed too? Can humans get the disease by eating eggs from infected chickens? Who will do the culling? Would the culling happen all at once, or step by step? Can disinfectant affect human health? Does it affect cattle if it gets on their grazing? What are the signs of avian influenza in humans? Was there to be compensation for the culling? These questions all indicated a finely tuned understanding of disease transmission, and to my mind an unexpected concern regarding the possible effects of the chemical disinfectant.[255]

Publicly there was no dissent as to the decision to cull. The meeting had been calm and the attendees appeared very serious and concerned. Children had been hushed, both sides had unhurriedly heard each other out, and there had been much attentive listening and nodding. Afterwards, however, in private, a small group of men suggested very mildly that they were unhappy with the decision, especially any culling uphill from the sites of known

[255] Formalin (an aqueous solution of formaldehyde) is widely used as a disinfectant in the poultry industry and is listed by the US government as a carcinogen.

infection. Still, they suggested, with the culling on Wednesday, they had a day to get ready, and there might be some paid work for them if they helped. When I questioned the leading officer about the time lag, which would provide the opportunity to move birds out of the culling zone, he explained that the local facilitator would be back the next day to watch for movements. '*Polisi* vet,' he explained. We drove off into the dark at speed, in convoy behind the ambulance's flashing blue lights. Everyone in the team wanted to be back in Padang as soon as possible.

I did not have the opportunity to return the next day, or the day after. If I had I would have watched from a distance with binoculars. I felt that my presence had had an effect on the proceedings I had witnessed in terms of making a decision to cull, and if I had been present at any subsequent cull, I suspected it would have been conducted with more vigour than if I had not been there. Without me, I felt implementation was more likely to remain vague and non-confrontational. The drawback of such an approach of course is the possibility of spreading the virus through infected birds being moved out of the culling zone. Nevertheless, I was left with a powerful impression of uniformed officialdom in action. The authoritarian Suharto era still causes many people, in the countryside especially, to treat officials with outwards respect, even if more privately they are critical of their abilities, ambitions and intentions. I did not feel it was appropriate to ask whether the *Polisi* vet mentioned at the end of the expedition would be as open to inducement as many police officers are generally considered to be in Indonesia, but this is the conclusion many Indonesians would have drawn.

Concerning the officials themselves, I felt that they had gone to considerable lengths to show respect and concern to the householders involved, and the introduction of a known, local facilitator into the process had obviously been an attempt to present something other than an authoritarian intervention, which, it is suggested, was also a major intention of the 'participatory' meeting in the mosque. The women officials, who were in their mid-twenties, had also diligently mapped the locations of the infected households with their GPS, and taken copious notes during our interviews. These they told me would go in their report. The time lag however between the confirmation of the virus and the culling activities was inexplicable from the point of view of technical disease control. Candidly, as we travelled at high speed back to the city, the senior official explained to me:

> If we were to go in and destroy everyone's chickens without warning, there would never be a report from this area again. Word would spread like thunder clouds and we

> would lose the respect of the people and the programme would fail. These are just poor people and our job is to help them.[256]

The net result of the intervention, however, was that whilst there was another successful red dot of detected H5N1 infection for the provincial, national and international risk maps, and a detailed report on file of a 'participatory' response, any virus remaining amongst the poultry of the hamlet would very likely be transported out of it that night, or early the next morning.

A number of points can be drawn from this case, all of which point towards the complexities that culture, politics and power introduce into what, amongst the designers of the surveillance project in head office at least, should be a straightforward scientific matter of detecting the virus and moving to stamp it out. First, the manner of at least one of the reports appears to relate more to the nature of the relationships between two neighbours than any public health orientated disease detection or control measures. A purified approach makes no allowance for mendacious or malicious reports. Second, as is so often the case, domestic poultry keepers are quick to point to commercial farms nearby as the source of any infection. As has been discussed, poultry farms do not make popular neighbours, but rarely does a community, or any individuals within it, have any influence over such commercial activity, and the PDSR remit had been defined deliberately to exclude such activities. Third, the arrival of a PDSR team inevitably presents as the arrival of officialdom. The khaki uniforms of the officers, the official motor vehicles (distinguishable by their red number plates), the notebooks, the test kits, the GPS devices, and even the apparent prosperity of the officials – they were taller and heavier than the villagers who seem physically minute in comparison – add up to what appears at least to be an authoritarian intervention, especially given the numbers that presented in this case. To me, the event felt much more like the arrival of the police than, say, emergency medical services or the fire brigade. Yet the same officials arrived bearing gifts and carefully announced the cull in a delicate way. Effective disease control would have seen an immediate cull, with deliberate actions to prevent poultry being moved out of the area. In fact, a process was instigated that was practically an invitation for the villagers to remove their poultry before the cull began. Here, at the far end of a chain that stretches to Rome, Paris and Geneva, significant matters of culture come into play that have little to do with the virus as a bio-medical entity. Again, a purified construction of H5N1 risk, that sees the virus as a natural object separate and remote from people and politics, proves to be untenable not only amongst the people affected by it, but also amongst those charged with controlling it.

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[256] Interview, vicinity Padang, 22 February 2010

8.6 Trusteeship and expertise

By 2009, drawbacks of the PDSR programme were beginning to be formally recognised. In particular the focus on household or 'backyard' poultry keepers was being called into question. The Independent Evaluation of the PDSR Programme (FAO, 2009) highlights this matter repeatedly:

> Results emerging from the FAO programme and other sources indicate that sectors other than the backyard poultry sector play critical roles in the dynamics and maintenance of HPAI in Indonesia (p.9).
> It appears from emerging data that sector 4 ['backyard' poultry keepers] probably represents the sentinel victim of infection, rather than the 'engine room' of HPAI dynamics (p.44).
> The PDSR does not appear to have had a significant impact on the prevalence of HPAI, and the tools at its disposal are weak. The evaluation team concludes that for effective HPAI control, greater attention must be paid to the commercial poultry sectors […] in which participatory disease surveillance tools are likely to play a lesser role… (p.61).

Among many of those involved in the Indonesian poultry industry, the focus on backyard poultry keepers had been considered misguided from the outset of the PDSR project. One Indonesian industry observer said: 'It was an open secret that AI came from the poultry industry and it was being affected badly. We knew it was like that in other countries'.[257] A highly ranked Indonesian official said:

> We always knew the problem was with the poultry industry, but they have the power. KOMNAS has always said that the backyard was the victim of AI, not the cause; that the problem is in the industry not in the backyard farm. In 2003, the first outbreaks were in industry, not in the backyard farms. And then who made the spread? It must have been the industry. How do backyard farms spread the disease so quickly all over the country?[258]

The remoteness, influence, and determined self-sufficiency of the large industrial poultry companies in Indonesia have been discussed in chapter 6, but it is also argued that the international organisations defining, driving and funding the response arrived in Indonesia with pre-conceptions as to low levels of infection amongst industrial groups. Citing a 2006 USAID document that funded the first expansion of PDSR, an FAO interviewee said: 'In the annex the assessment was: Sectors 1 and 2 – largely free; Sector 3 – largely free; Sector 4 – HPAI. So the focus went there. We now know that that initial assessment was a bit flawed'.[259] Another interviewee suggested that other influences were at work:

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[257] Interview, Jakarta, 5 February 2010
[258] Interview, Jakarta, 8 February 2010
[259] Interview, Jakarta, 9 February 2010. In the NSWP the poultry sector classifications are given as follows: 'In the terminology adopted by FAO and OIE, the poultry industry is conceived to comprise: Sector 1: vertically integrated large-scale commercial producers; Sector 2: large, independent broiler and layer producers; Sector 3: small-scale independent operators; Sector 4: producers of free-ranging

> The backyard was where people were dying and this was where people had contact with poultry. People took HIV/AIDS as a model and all the campaigns that have focused on attempts to prevent transmission. The idea was that certain well-defined behaviours needed to be changed and if this can be done, the transmission chain would be broken.[260]

Interventions related to risk communications and public health are discussed in chapter 9, but the final section of this chapter moves on to argue that, as well as the adoption of an inappropriate, purified scientific approach, a modernist post-Enlightenment notion of trusteeship underpinned the H5N1 surveillance programme, which was linked to conceptions associated with the superiority of science, and the need to support the poor. The consequence of this is that H5N1 risk actually hybridised to involve social, cultural and political factors within the implementing organisations, as well as it was extended into the field.

The FAO's defined obligations to support the modernisation of agriculture in developing countries with a view to assuring good nutrition for all has been discussed in chapter 4. With this mandate, it is unsurprising that the organisation aims to support the poor and poor farmers. One interviewee working for an international organisation suggested: 'The international organisations – DFID, USAID, for example – typically have a poverty lens. So they all started with backyard small farmers. PDSR, this started with an image of poor small farmers'.[261] This approach suited that of the Indonesian government, particularly officials within the Ministry of Agriculture. A poultry industry journalist said:

> The mindset of the government is to empower the community to deal with poverty. The poverty reduction strategy is the umbrella of all governmental policies and poultry farming is no exception.[262]

Continuing the theme, another interviewee, a poultry industry executive, said:

> From when Indonesia began, the idea was that we needed to support the poorest. The Ministry of Agriculture says adapt for the small producer. This is their way of thinking. There is a history of this in all agriculture, including the poultry industry. In 1980s for example, the government began the backyard poultry intensification programme with this objective.[263]

Yet another respondent, working for the FAO, stressed the new political importance of the rural population and the need for the government to support poor farmers:

> The FAO entered the country and started working with the government. They had to. This is their remit, their default position. This led them to focus on the poor and the local vet services. The central government has no real say over the big farmers and is

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village poultry. This is a useful working classification, but the distinction between sectors 3 and 4 is not rigid.' (Footnote p.6)

[260] Interview, Jakarta, 9 February 2010

[261] Interview, Jakarta, 5 February 2010

[262] Interview, Jakarta, 11 February 2010

[263] Interview, Jakarta, 12 February 2010

> focused on the development of small farmers. Many votes are in rural Java, and with the arrival of democracy [...] AI was a critical issue. So PDSR was developed only to look for the disease in *ayam kampung*, and they found it.[264]

The cultures and pro-poor mandates of the organisations that defined and implemented the PDSR project can therefore be seen to be contributing to a hybrid H5N1 risk construction that distorts the supposed purity of the surveillance operation, supposedly seeking out (and eradicating) the virus irrespective of its location or its connections. A genuinely scientifically pure set of organisations, totally removed from culture, power and politics, would not have been diverted towards focusing operations on just one of the many sectors involved with poultry. Yet this is what happened. Simply put, the culture of the FAO meant that it had no option but to construct H5N1 risk as a hybrid: one affecting, and emanating from, the poor. Inevitably, the organisation was determined to locate the problem among those groups that fell within its mandate, as well as follow the lead of the funding organisations.

A second cultural factor at play within the programme relates to the definition of the FAO as a 'technical' agency. As a technical organisation involved in a technical intervention, it is obliged to avoid the political, and frame the problem in technical terms, amenable to technical solutions. In a similar development context, Ferguson's (1990) 'anti-politics machine' has been noted, which, in the terms of the explorations of this thesis might be read as a 'purification machine', determined to deny, or at least avoid, impure hybrids involving culture, politics and power. Furthermore, as technical 'experts' inevitably accompany technical interventions, the cultural complexities associated with such groups noted in other investigations are relevant. In the context of expert advisors operating in the domain of international relations, Haas (1992:3) considers the formation and self-sustaining routines of 'epistemic communities', which are often driven to collude, even unwittingly, to devise solutions that support technical viewpoints and exclude other factors. One insider's analysis offers a view of what occurred within the technical groups leading PDSR that supports this analysis:

> Once an initial assessment was made, it was not challenged for a long time. This was partly a result of psychology and groupthink dynamics. […] In the early days there were so few individuals involved and there was inevitably a bias towards their expertise [focused on smallholders]. Also, the people planning were the people carrying the tasks out, implementing. The planners were carrying out strategy. So there was a bias towards reinforcing the original assumptions. There was also a bias from the initial success of the work. This led to more funding which reinforced the approach. It was

[264] Interview, Jakarta, 5 February 2010

> self-perpetuating. [...] If we knew then what we know now, the approach would have been different.[265]

In Indonesia, given the uncertainty surrounding many aspects of the H5N1 virus in the early days of the response, it was inevitable that the veterinarians, epidemiologists and public health specialists who devised and implemented the surveillance aspects of the NSWP – 'a generic blueprint for HPAI control' (FAO 2009:20) – would find themselves so arranged. My contention is that a purified scientific approach is unsustainable even if it is conceivable. In the context of the participatory aspect of the surveillance programme, it is suggested that the constitution and maintenance of such a knowledge elite actually precluded the feedback that the participatory element of the programme was supposed to capture. Despite invoking the rhetoric of participation, in its determination to focus on a technically-defined virus, the PDSR project actually precluded the possibility of bringing any situated knowledge within its ambit, significantly to the detriment of the project's objectives of viral surveillance and disease control.

8.7 Conclusion

This chapter has described and analysed the H5N1 surveillance system that was introduced into Indonesia by an international technical agency, the FAO, and deployed into the countryside through the national and regional offices of the Indonesian agriculture ministry. Supposedly 'participatory' and designed to 'use local knowledge to formulate programme objectives, gather data and intelligence, and analyse information', in implementation the project actually worked against these objectives. Drawing most significantly on a construction of modernity involving an independent, purified science objectively and authoritatively creating 'true' knowledge of a separate nature – the incidence of the virus in time and space – the project also incorporated modernist notions associated with benevolent support towards the development and the protection of the poor, and presumed the existence of a rationalist bureaucratic administration that would conform to its norms, and implement them. From the outset, then, social, cultural and political dynamics are shown to be involved in constructing hybrid H5N1 risks, that have dynamic and complex relations with its construction as a bio-medically defined entity.

The purified, scientific risk constructions of those designing the project have been shown to have hybridised with globalised, modernist development objectives, which form part of the mandate of the FAO and are recognised as politically expedient in the national

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[265] Interview, Jakarta, 9 February 2010

agriculture ministry. These hybrid risk constructions have resulted in biases as to where the project was applied, leading to a focus on the rural poor. In particular, large industrialised farms, which accorded with the FAO's conception of modernity, were not included within the scope of the project, either for surveillance, or for consultation. With little technical support required in this sector, which was determined to keep its own council, any intervention would have been seen as, or cast as, political, and consequently outside the mandate of international technical actors concerned with pro-poor agricultural development, and beyond the influence of national or regional ministry officials. Internally to the project, social dynamics were also shown to have been at play, and to have been suppressed.

In implementation in the countryside, a process dependent on a bureaucratic apparatus largely outside the FAO's control, the project has also been shown to be influenced by social factors, particularly power dynamics. At the interface where the bureaucracy intersects with the population, the purified rigour of the objective of surveillance, focused entirely on the H5N1 virus, has been shown to be enmeshed in cultural and political matters, compromising purified scientific risk constructions. As in the commercial poultry sector discussed in the previous chapter, the underlying risk construction of the global response – that the virus is dangerous to humans – does not correspond with everyday experience, and the scientific determination of a specific pathogen means little to a population with extensive knowledge of poultry raising, and long-standing experience of poultry disease and mortality. These grounded forms of knowledge and practice have been shown to be by-passed or even actively avoided in this so-called 'participatory' surveillance programme.

In these circumstances, the surveillance operation, and the response function that became attached to it, turns on the power relations between a rural, and largely poor, population, and the government officials and their agents charged with implementation. For historical reasons, few in the countryside see an extended state as an entity that operates for their benefit. For them, as Foucault (1991) suggests, the surveillance project brings with it the enforcement of unwelcome, external norms, and the risk constructed around the virus by rural poultry owners consequently becomes driven by the need to avoid the attention of authority, which brings with it the possibility of unwelcome uncompensated culls across wide areas. This inhibits reporting, and works against the objectives of the project. Against this background, when called out by reports which prove to be positive for H5N1, few officials appear enthusiastic to drive a purified process through vigorously, and adopting a paternalistic posture towards the poor, seek out solutions designed to find middle ground between the purified constructions of science and the dynamic and variable constructions of society. These

solutions might be called hybrid: dynamic crossings of both the ideas and realities of nature and culture, science and politics, and knowledge and power.

9. Communicating risk

> 'Communication is about being effective, not always about being proper.'
> (Bennett, 2004:4)

This chapter examines a set of risk communication, information and public awareness initiatives deployed nationwide from 2006 to 2009 into communities and professional groups, schools, and via mass media in response to the H5N1 virus by UNICEF, working with national and local partners. Funding agencies and implementing actors construct H5N1 as a human pandemic threat as well as a dangerous disease of humans and poultry, and dominant modernist constructions driving the programme relate to public health, preventative hygiene and self-improvement. In implementation however, in contrast with the cases presented in the previous two chapters, the programme proves to be plural and diverse, and drawing on different types of knowledge, it is shown to encourage rather than suppress multiple risk constructions, and to incorporate rather than exclude social, cultural and political factors. On the ground, there is little evidence of the governmental rationality that is involved with regulations addressing the restructuring of the poultry market chains into Jakarta; and in place of the 'veterinary police', and their attempts to detect and eradicate a highly specific virus, with the attendant complexities associated with social factors and power dynamics, a determinedly multidimensional approach allows, and even encourages, hybrid risk constructions to emerge amongst a wide range of diverse groups.

The chapter first outlines the communications objectives of Indonesian national H5N1 response planning, and sets these in the context of global public health orientated prescriptions for H5N1 related behaviour change, a 'deficit model', which casts risk communications as the transfer of expert knowledge to deficient populations, and the political implications of this framing in modern health-risk discourses. Global prescriptions, however, are shown to have been modified early in programme planning to take account of Indonesian contexts, and to modulate further as they diffuse through a set of epistemologically plural networks which work with and build on a range of dynamic, variegated 'regional' constructions of modernity. The chapter continues to analyse the dynamics involved in the relationships between UNICEF and its national and sub-national partners, and the effects of the organisation's relatively decentralised structure and devolved decision-making processes in programme planning and implementation. It then describes and discusses five major elements of the programme concerned with media staff training, professional pandemic planning, the involvement of religious leaders, and activities in schools and communities. One of many

overlapping risk communication initiatives, the programme is shown to be plural and flexible and to embrace multiple perspectives as it extends bio-medical conceptions of the H5N1 virus into a range of social domains.

9.1 Defining risky behaviour

With the H5N1 virus having spread across large parts of Indonesia by late 2005, and with 14 human cases, including nine deaths, confirmed between July and December 2005, the National Strategic Plan for Avian Influenza Control and Pandemic Preparedness 2006 – 2008 (NSP) (Republic of Indonesia, 2006) published in January 2006 stressed the need to prioritise human safety, and included 'Risk Communication, Information and Public Awareness' in a set of ten components that also addressed controlling the disease in animals, economic and food security issues, and pandemic preparedness. The genesis of the NSP has been discussed in chapter 6, where it was argued that the plan had been significantly defined by international norms and standards. The plan defines 'Risk communication' as: 'activities specialized for socializing various risks associated with Bird Flu and the possibility of human pandemic influenza […] so that communities will be alert and won't panic' (p.36). Objectives specified for the communications, information and public awareness component included:

> 1. Disseminating knowledge about AI to the community and health personnel
> 2. Empowering communities to actively participate in surveillance and network development in AI control, especially small and middle scale animal farmers
> 3. Formulating risk communication strategies, including advocacy to decision-makers on AI control
> 4. Advocacy to policy makers to control AI
> 5. Developing Indonesia's image in the international community on the efforts that have been made (p.18).

The terminologies used suggest the principles underlying the communications programme exemplify a similar, rationalist, post-Enlightenment construction of modernity that has underpinned other elements of the H5N1 response, with its globalised drivers and concerns. 'Socialisation' in particular, which became a common catch-all term used by many involved in the design and implementation of the programme in Indonesia, is a key term. Central to functionalist approaches in sociology in the middle of 20th century, socialisation – 'to render social, to make fit for living in society' (Clausen, 1968:21-21) – links the acquisition, or imposition, of social norms and values to the maintenance of order through social and cultural continuity. The more complex implications related to the power dynamics associated with this approach are discussed further below.

The NSP, however, did not define the norms and values it sought to inculcate, or specify the practices it wished to encourage. Unlike the governor's decrees discussed in chapter 7, or the surveillance project discussed in chapter 8, no socio-economic or scientific objectives were explicitly determined. At that time, more specific objectives were under review at the global level, and subsequently, in March 2006, a meeting of WHO, FAO and UNICEF communication specialists in Geneva identified seven 'priority behaviours' for preventing bird-to-bird, and bird-to-human transmission of H5N1:

1. Report unusual sickness/death among poultry, wild birds and other animals immediately to the authorities
2. Seek treatment immediately if you have fever after contact with sick birds
3. Wash hands frequently with soap and water
4. Clean clothes, footwear, vehicles and cages with soap or disinfectant
5. Separate poultry species, wild birds, new birds and living areas
6. Handle, prepare and consume poultry safely
7. Burn and/or bury dead birds safely.[266]

From this list, four 'behavioural objectives' were highlighted for the H5N1 response: 'Report, Cook, Separate, and Wash', which, it was recommended, should form the basis of avian influenza communication strategies worldwide. The proviso was given, however, that 'Perceptions of risk, poverty, difficult living conditions, poor access to resources and deep-rooted cultural practices are some of the factors that prevent people from practicing safe behaviours'.[267]

In Indonesia, a number of studies subsequently identified what were perceived to be the relevant issues. A National Institute for Health Research and Development study (NIHRD/WHO, 2008:70-71), for example, defined 'AI Risky Behavior' as including: raising poultry without cages; putting poultry cages next to/underneath houses; rarely cleaning poultry cages properly; improper disposal of poultry carcasses; mixing sick poultry and healthy poultry in the same cage; not wearing gloves when handling poultry; not wearing mask and boots when cleaning poultry cages; taking poultry faeces (for fertilizer) directly with bare hands; washing hands without soap after touching/handling poultry, cleaning cages, feeding and slaughtering; and eating half cooked or uncooked poultry eggs. At the outset, it was acknowledged that in many areas, especially in the countryside, where domestic poultry

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[266] Source: UNICEF. Available at: http://www.unicef.org/avianflu/files/WHO_FAO_UNICEF_AI_March_2006_adhocsummaryreport.pdf [accessed 22 September 2010]

[267] Source: UNICEF. Available at: http://www.unicef.org/avianflu/index_42666.html [accessed 22 September 2010]

keeping is common, the proposed H5N1 response activities amounted to 'changing a national way of life', according to one senior civil servant involved in the response.[268] Anticipating such analysis, potential problems and obstacles identified in the NSP included: 'Lack of understanding and awareness of AI and HPI [Human Pandemic Influenza] and its potential risks in all layers of society' (p.8).

9.2 Deficient people?

Underlying many behaviour change communications programmes, especially those designed and delivered in the context of public health and reductive risk management framings, is what is often referred to as a 'deficit' model. This envisages a 'deficient' public and a 'sufficient' science (Gross, 1994). In many such programmes there is a presumption that knowledge is lacking among the public which, if made good through communications, will result in changed attitudes and behaviour. Irwin (1995:92) scathingly refers to the model as the 'public ignorance model', as it focuses on what the public does not know, rather than on what it does know. This presents political implications if it is accepted that, 'a state of ignorance is not simply an absence of knowledge but a state of being ascribed by those with power to those without' (Hobart, 1994:4). As mentioned in chapter 5, a key concept that emerged associated with the European Enlightenment at the end of the 18th century was that of the 'medical police' (*Medizinalpolizei*), together with related prescriptions to promote public and private hygiene. More recently, amongst some groups in the 20th century, including the WHO, health has come to mean not just the absence of illness, but the pursuit of well being in the future, together with suppositions that preventative interventions against ill-health are possible. Health can therefore be cast as a negotiation with risk, and this shift from dangerousness to risk may permit interventions to be determined and legitimised on the basis of expert assessments (Petersen and Wilkinson, 2007). This may extend to suggest that the self-management of risk is now an obligation of the modern citizen (Rose, 1999; 2006). Following Foucault in his conception of governmentality, as discussed in chapter 2, modern health-risk discourses may create new forms of subjugation which render subjects vulnerable and so in need of heightened scrutiny and surveillance.

Such concerns can become particularly pointed in a development context, where there is a long history of public health communications involving the deficit model. As long ago as 1969, Jaspan (1969) cited in Firth (1978:241) suggested that:

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[268] Interview, Bogor, 21 August 2008

> Implicit in the WHO programme of maternal and child health and of health education, is an attitude that if traditional beliefs and customs are to be studied at all it is to supplant them, for the chief concern of most persons engaged in health education of the public is to find efficient methods of conveying new ideas to people of different cultures and customs.

Similarly, Adams (1990), Escobar (1995) and Sivaramakrishnan and Agrawal (2003) point to a plethora of development projects which have aimed to facilitate the 'diffusion of knowledge' or encourage new 'knowledge-regimes' with the objective of teaching new skills to what are usually perceived to be backward populations.

This was doubtlessly the dominant framing of the H5N1 risk communications response in Indonesia, but, as will be discussed below, the centralised prescriptions from Geneva were modified as soon as they arrived in the country, and modulated further as they were spread through the networks designed to promulgate them. The prescriptions that emerged at the interface of the programme and the population did not then, in many cases, deviate significantly from existing practice, and were very often presented in terms that did not contradict or denigrate it. As will be demonstrated, the programme focused very much on 'awareness raising', rather than determinedly attempting to enforce external norms. In this it stands in contrast with the regulatory approach to changing domestic poultry keeping practices and commercial slaughtering and marketing routines in Jakarta, discussed in chapter 7. There were to be no new laws applying to children collecting eggs, say, or even to prohibition of the disposal of chicken carcasses in rivers. It is also significant that the programme related to domestic behaviour rather than commercial practices, and that it threatened no livelihoods. The contrast with the surveillance project discussed in chapter 8, which was entirely focused on a scientifically defined H5N1 virus, to the exclusion of any cultural or socio-economic consequences, or even other contagious diseases of poultry, is also telling. As discussed in the next section, the mediating institutions were also constituted and regarded differently compared with the khaki-uniformed 'veterinary police' charged purely with locating and eradicating the H5N1 virus.

9.3 Saving children

Following the publication of the NSP in early 2006 in Indonesia, many national and regional government organisations, and NGOs, became involved in H5N1-related communications initiatives. FAO and WHO programmes also incorporated communications components. The largest initiative however was instigated by UNICEF, which brought acknowledged experience to the table in health and communications. With a focus on the needs and rights of the child, UNICEF has always been involved in public health, and as a co-sponsor (with the WHO) of the

1978 Alma-Ata Conference, and related Declaration, the organisation was instrumental in redirecting development health care towards community-based approaches, often involving employing and training lay workers. In Indonesia, UNICEF has been active since 1976 and now has a significant presence involving over 350 staff, of which roughly two-thirds are deployed in 12 field offices spread across the country. The organisation is involved in a wide range of projects, including maternal and newborn health care, nutrition, water and sanitation programmes, malaria, domestic violence, child abuse, MDG monitoring, HIV/AIDS, education and gender equality, as well as emergency operations. It is operationally and epistemologically more plural than the WHO (which focuses on bio-medicine and health systems) and the FAO (which focuses largely on veterinary medicine when concerned with animal diseases), has a higher public profile than the other organisations, and its focus on children and mothers means that it is widely perceived as a benign force.

In the UNICEF headquarters in New York, an official who had been involved in the early stages of the global H5N1 communications response was explicit: 'My analogy is preventative medicine, don't smoke, don't eat that hamburger, watch your diet and so on because the consequences could be bad'.[269] He went on, however, to indicate that whilst functionalist ideas relating to preventative and health-seeking behaviour change as defined by expert authorities may underpin the approach of the risk communications programme, there was a wider and more plural understanding of the issues involved:

> The content – basic hygiene issues such as hand washing – itself is common, but it is being packaged and utilised to contribute to other agendas because it is all about peoples' environments. You need to think how do you not overwhelm communities with words like pandemic which are foreign, but what can you do that compliments the way that they live without seeking to radically change who they are, and who is in the best position to do this and what is the best way to make this happen.

In this, it can be seen that even at the top of the organisation there was flexibility to recognise and accommodate cultural matters that more rigorously regulatory or scientifically defined approaches would suppress or exclude.

For reasons discussed in chapter 3, my research for this chapter focused almost exclusively on the UNICEF/KOMNAS 'awareness raising' programme, which ran until mid-2009, when funding was expended and the programme terminated as planned, with vestigial 'AI and Pandemic Planning' activities moved to fall under UNICEF Indonesia's communication unit's remit. As noted at the beginning of this section, there were very many other H5N1-related initiatives underway in Indonesia at the time. CARE and Save the Children both ran projects, or

[269] Interview, New York, 9 June 2008

incorporated H5N1-related activities into existing programmes, for example, and many national and regional government organisations ran their own campaigns or programmes. Another large concurrent project was the 'Community-Based Avian Influenza Control' (CBAIC) programme, which was implemented from August 2006 by the Washington-based private sector organisation, Development Alternatives Inc. (DAI), directly contracted and funded by USAID. Working initially with rural communities, this programme wound around, and in some cases overlapped, with activities run by UNICEF, and other national and international agencies.

This kaleidoscope of activity introduced significant plurality into the mix of messages, which was widened further by a large number of public service announcements (PSAs) broadcast on television. Between April 2006 and June 2007, at least five organisations in addition to UNICEF/KOMNAS ran separate and uncoordinated, avian influenza related campaigns nationally on television. In Jakarta, three further institutions – the *Departmen Komunikasi dan Informatika* (the national communications and information ministry); the *Departemen Pertanian* (the national agriculture ministry) and *Dinas Keshehatan* (the DKI Jakarta health department) – produced and broadcast their own avian influenza related PSAs. In all, at least 18 different campaigns were broadcast relating to avian influenza featuring a wide range of animated characters, celebrity comics, wise elders, worried women and other tropes of the advertising industry (UNICEF, 2009:11). With television estimated to reach over 80 per cent of the national population, including 98 per cent of those living on Java, and 17 per cent of Java's population estimated to watch more than four hours per day, this channel for avian influenza related awareness raising proved remarkably effective (Aegis Media, 2009). Consistently across all the research conducted for this thesis, respondents have indicated that they have received information about avian influenza from television.

Before discussing the more specific elements that comprised UNICEF/KOMNAS activities, it is important to note that the programme was required to incorporate a wide and flexible set of H5N1 risk constructions. Fundamentally, the programme had to address risk constructed as transmission of the virus from animal to animal, from animals to humans, and from humans to humans in the posited event of a human pandemic. Consequently, a mix of animal specific activities (e.g. training para-veterinarians and volunteers to recognise and report the disease), human health related activities (e.g. training rural health post personnel and events in the community), and pandemic specific activities (e.g. contingency planning for groups associated with utilities supplies and so on) occurred, which often overlapped both internally, and with the plethora of other projects and initiatives being implemented by different organisations with different objectives using different channels. The evaluations that

accompanied and followed the programme criticised it for being un-coordinated, and offering mixed, overlapping and sometimes incongruent messages:

> Despite considerable progress towards improved coordination problems with inter-departmental, inter-agency and internal coordination persist. Some of the problems include: Many different agencies pursuing similar activities in parallel which can lead to confused messaging and duplication (UNICEF, 2009:20).

This chapter, however, argues that this overlapping, multiple messaging represents a positive feature rather than a weakness of the programme. Whilst easily cast as informing a deficient population, and often deployed in such a manner, by its acceptance of the multiplicity and plurality of its objectives, and of the groups and perspectives it was directed at, as will be shown below, with further flexibility introduced as the programme diffused through multiple implementing networks, the myriad 'awareness raising' risk communications activities incorporated and built on cultural, social and political factors, rather than insisting on a purified, scientific, universalist approach that excluded or suppressed them.

9.4 *Tanggap flu burung*

In considering the development and deployment of the H5N1-related risk communications programmes in Indonesia, it is helpful to recall that throughout 2006, 2007 and 2008, at least two human deaths were confirmed as a result of the H5N1 virus nearly every month, with clusters of cases, usually among blood relatives, pushing the toll in some months as high as 13 (in May 2006, including the Karo cluster in North Sumatra). These were widely reported in broadcast and print news media at the time, but bear little comparison with the numbers of deaths in the country in the same period related to diseases such as TB, road traffic accidents, or childbirth, as discussed in chapter 5. Contact with diseased and dying chickens was usually implicated as the source of the disease, with the largest proportion of cases presenting in West Java, particularly in and around Jakarta's urban area (Sedyaningsih et al., 2007). With some suggesting that these figures represented only the tip of an iceberg (cases living relatively close to hospitals, who felt wealthy enough to present at one), and with many farmers and smallholders on Java and in parts of Sumatra and South Sulawesi suffering significant poultry mortality, there were peaks of concern regarding human and poultry health in many rural and urban areas, generally associated with media reports. As previously discussed, the international organisations funding, designing and implementing responses in collaboration with national and sub-national partners were addressing the issue as a crisis.

Funded by an emergency budget[270] UNICEF's 'AI & PP' (Avian Influenza and Pandemic Planning) activities stood outside the organisation's national strategic plans, and a five-strong Jakarta-based team, with backgrounds in print journalism and television news production, were recruited and accommodated in an annex office to work with a national counterpart, KOMNAS FBPI, the national avian and pandemic influenza agency. The staffing and the location of the project were significant. Compared with the 60 strong FAO team, which included 15 international 'experts', located in the Ministry of Agriculture directing and administering the PDSR project, the UNICEF head office team was small and made up entirely of Indonesian-speakers with extensive experience of communications in the country. The risk communications programme, with its separate lines of funding, and a physically separate office, also stood at a distance from the bureaucracy associated with UNICEF, which was effectively operating as a hosting rather than directing organisation.

With staff in place and accommodated, in September 2006 UNICEF and KOMNAS jointly launched a national awareness raising campaign called *Tanggap Flu Burung* ('Take Action on Bird Flu').[271] Drawing on the international prescriptions discussed above, the campaign's keystone was a hand symbol with four key messages on the fingers: don't touch sick or dying birds; wash your hands with soap before eating and cook poultry well; separate new birds from the flock for two weeks; and report flu-like symptoms and seek medical attention, especially after contact with birds. It is important to note that in the original international 'Report, Cook, Separate, and Wash' prescription, reporting related to 'unusual sickness/death among poultry, wild birds and other animals' and not as in the *Tanggap* prescription to report flu-like symptoms in humans. The complexities of reporting poultry disease in Indonesia were recognised early and were not incorporated into the programme. From the outset then, the programme demonstrated a plurality that the more purified H5N1 response initiatives could not. Similarly, there were some early discussions as to whether the programme ought to work towards encouraging people, especially children, to avoid touching all birds, all chickens, or just sick and dying chickens.[272] Eventually it was decided to focus on the latter as a wider prescription would garner little sympathy or understanding amongst

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[270] The Government of Japan initially contributed US$3.2 million for activities to December 2006, and US$650,000 for the period to December 2008. The Canadian International Development Agency (CIDA) stepped in to contribute a further US$3.1 million for the period April 2007 to June 2008.

[271] 'Take Action' is the official UNICEF/KOMNAS translation of the word '*tanggap*' which can also mean 'perceptive, listen, note', 'response, reaction' and 'switched on, engaged'. A senior KOMNAS official suggested that in the context of the programme, '*tanggap*' was better translated as 'Aware'. He said '*Awas* [Beware] *Flu Burung*' had been deemed inappropriate as sensationalist and fear-mongering. (Interview, Jakarta, 12 May 2009)

[272] Interview, Jakarta, 24 December 2008

people living with birds every day and who suffered little disease as a result. Concerned with people's behaviour and culture, the programme demonstrated considerable early flexibility.

The programme also spread itself over a wide range of objectives involving a wide range of groups with diverse interests and concerns. Its main activities fell under six headings:

> 1. Advocacy, which involved supporting KOMNAS FBPI, developing a strategy of media management, and setting up and running websites, SMS networks, and press conferences
>
> 2. 'Community awareness and empowerment' activities, which were conducted mainly in Java, South Sulawesi and Sumatra
>
> 3. Media training workshops and conferences
>
> 4. Pandemic preparedness workshops, which were held in nine regions in 2009
>
> 5. A religious leader programme, which included the production of a booklet on hygiene which was distributed nationwide
>
> 6. A schools programme, which was introduced into around 75,000 schools between 2007 and 2009. This included facilitator training, teacher orientation workshops, and the design, production and distribution of kits of learning materials for schools.

Although, as discussed above, the key messages emanated from a global technical centre, drawing on the FAO/WHO/UNICEF 'Report, Cook, Separate, Wash' prescriptions, which had been modified for the Indonesian context, UNICEF provincial field offices were used to introduce further flexibility and variety into the programme. Indonesia is large and culturally diverse, and each field office is familiar with the characteristics of its area and has established ties with local administrators. Each field office therefore developed its own plan, to deploy into its own territory, and approaches and activities varied significantly from district to district, although much of the 'collateral' (i.e. the printed material, banners, give away items, and videos) remained the same. Ample opportunities existed for projects either to be generated at a local level, or for centrally defined objectives to be translated. The programme was therefore significantly different from a technical, top-down approach promoting a universalistic view. It was also accepted that relationships with, and the competence and enthusiasm of, local government authority 'counterparts' and NGO representatives were key. As one senior UNICEF staff member in the Makassar field office put it:

> At the end of the day it is all politics. [...] I see myself mainly as a diplomat working for women and children [...]. Ultimately what is most important in this job is who you know and who knows you, and whether you get on. [...] My job is to have influence, to get other people to see our point of view, and this means understanding theirs. It's very simple really, and very local.[273]

[273] Interview, Makassar, 17 April 2009

It can therefore be seen that not only was the internationally defined communications response modified as it came into the country, but also, within broad objectives described as 'awareness raising', authority to determine how it was to be deployed into different regions was very largely devolved to those regions, and put in the hands of people who knew those regions and were prepared to operate politically in them.

Following a note on 'advocacy', which involved fundamentally different objectives from other elements, each of the broad elements comprising the *Tanggap Flu Burung* programme is considered below, in order of scale, with a short discussion offered for each regarding how social and political factors were incorporated rather than excluded from H5N1 risk constructions, and how the programme built on a range of dynamic, emerging constructions of modernity.

Regarding advocacy, it is important to note that compared with the delicate relationship the WHO had with the Ministry of Health at that time as a result of the then Health Minister's refusal to share human H5N1 virus samples internationally, and the complexities of the relationships between the FAO and various departments in the Ministry of Agriculture, UNICEF stood in remarkably good stead with their government counterparts. KOMNAS was a new organisation, established specifically to address H5N1, and consequently carried less history than the larger, longer-standing ministries. UNICEF therefore started with a relatively blank slate to work with, and its reputation preceded it. A senior KOMNAS official said:

> UNICEF in Indonesia is better placed to promote change for health than any other international or national organisation. Communications – sending and receiving information – is very important and very strategic. If I had to choose the last programme I'd dismiss, it'd be communications.[274]

He went on to describe the collaboration between the two organisations:

> I should say that UNICEF was one part of the UN system we felt we could have open communications with. That was very useful. Not just the AI people, but also right up to the top, the representative. We felt we could be open, ask silly questions and be honest. That is sometimes very difficult with other UN agencies. The others put themselves into very specific lines – animal health for example – and that is not always helpful for us. UNICEF has covered so many multidimensional issues – look at the rumour tracking work we are doing with them now on H1N1 for example. […] We see it in almost all of the field offices too. They talk to everyone. We cannot build that interaction if you don't have openness. I have to say that not all UN people have that quality.

He also indicated the characteristics this relationship engendered in the communications campaign:

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[274] Interview, Jakarta, 12 May 2009

> From the beginning, no one knew exactly what to do, so we built the programme together. The basic messages arrived in English and were not always workable. Then we had a period of growing together and came to good consensus. Initially we built [the programme] on broad based communications – let's talk to all people. […] We are a very open country now. Information comes from many sources. Sometimes it is confused. The basic objective was just to make people aware without creating panic.

National aspirations for the risk communications programme can therefore be seen to be multifarious and plural. There were no moves on the parts of either UNICEF, or its national counterpart, to construct H5N1 risk exclusively as a purified, universalistic matter. KOMNAS incorporated such a position, through its scientific committee, but it was accepted within the organisation that this was just one strand of its activities. Different messages for different groups formed a more fundamental part of the approach, together with, as will be seen in the next section of this chapter, a deliberately wide ranging set of engagements with professional groups, including journalists and religious leaders, and in pedagogic environments such as schools as well as in many different types of communities across the country.

9.5 Professional groups

The UNICEF/KOMNAS communications programme's media training workshops, which were firmly set in the context of professional development, had explicitly didactic objectives. They were designed to encourage journalists working on newspapers and at television and radio stations to publish and broadcast information about avian influenza and the measures that could be taken to protect against it. Workshops were designed and run by a local NGO over two or three days and included presentations by medical doctors and veterinarians on avian influenza, presentations on government and other stakeholder responses, and training on how to report on avian influenza. Trainees were provided with a specially developed manual and contact information, and in some locations made field trips to hospitals, testing laboratories and local communities. Training was also provided, and enthusiastically received, on media ethics, radio and television script development, and media production techniques. In total over 300 journalists from 64 broadcast and print organisations took part in the training. Contracts obliged the attendees and their associated media organisations to broadcast or publish avian influenza related material, and some 3,110 items were subsequently determined to have been aired or published by attendees on the programme, along with an unknown number of radio talk show spots, a cookery show, and a radio drama.[275]

[275] Interview, Jakarta, 14 April 2009

Among the nine journalists interviewed who had taken part in the programme and visited West Java, which is badly affected by H5N1, from their home in Ambon, which has had only sporadic outbreaks, diverse risk constructions were evident.[276] Two spoke of a new awareness of the human pandemic threat. One said: 'I had no idea of the idea of a pandemic and how this could be more dangerous than HIV/AIDS'. Another said: 'If not controlled it can be very dangerous like 1918'. Others stressed a new awareness of the virus as a threat to animals. One said: 'I did not know how a chicken could be dead in a few hours, or that animals (and not just chickens) can look healthy but have disease'. Another spoke admiringly of the village-level organisation he had witnessed on Java:

> Two villages had prepared as emergency villages for AI. In one, a committee had been formed. It had identified what had been done and what needed to be done. The community had learnt how to identify cases and made an action plan. The other village was already an emergency village for avian influenza. The community knew as standard how to prevent avian flu, how to clean up. They knew what to do if there was a case. Go to the emergency post with the midwife and tell her. It was interesting that campaign was community based with their own methods. The villages had made rules – poultry was not to come in from outside, there was a system of chicken ID cards.

An energetic sense of engagement, and even the need to agitate, which is common amongst Indonesia's *Reformasi* era journalists, had emerged as part of the H5N1 risk construction. As a group, the journalists announced: 'We are campaigning for a plan, to prepare the plan, to form an emergency team. There are lots of stakeholders and it is complicated but there could be a pilot village as an example to others'. Criticism of the government – national and local – also quickly came to the fore. One interviewee said: 'The government campaign has focused on danger to human health – the virus – but has not stressed the danger to poultry'. Another said: 'The energy of villages in Java was impressive. In Moluccu [the province of which Ambon is the capital] it is low, like they don't care. The local government here needs to make a plan for the pandemic'. Another pointed to a perennial issue: 'There is a real need to improve the hospitals in Ambon. I have been there and they are not ready. We need to campaign for this.'

In this case, a distinctly political element can be seen to have contributed, amongst the journalists of Ambon at least, to extend H5N1 risk construction beyond a threat to human and animal health, into a wider issue that required their professional engagement towards pressing their government for better facilities.

Professional engagement was also prominent at nine pandemic planning workshops held in different locations across the country, which were designed to increase the capacity of

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[276] Group interview, Ambon, 17 April 2009

non-health sectors to cope with the widespread disruption of an influenza pandemic.[277] The workshops ran over three days and typically involved around 70 individuals representing public, private and community organisations.[278] They included briefings on the current global situation and the Indonesian national plan; documentary and fiction films; guided discussions on operational responses required from security, communications, utilities and welfare sectors; and table-top simulations and reviews. At the earlier workshops very few of the delegates (I only found one in fact, who was charged with managing occupational health at a multinational mining company) professed to have considered the idea, or impact, of a pandemic, personally or professionally. By the end of each workshop very few, if any, delegates failed to realise that a pandemic would produce an unusual set of challenges calling for a novel and wide ranging set of professional responses. One attendee said:

> I had a light bulb moment. I saw the difference between natural disaster and pandemic. We are used to natural disasters but need to understand the difference. My heart was beating fast. Imagine if this really happens…. We really need to prepare equipment in advance. We can't run out of gas [petroleum]. The police and the hospitals need to be ready. We need to make recommendations to our higher ups. We need also to take this down to the lower levels.[279]

Another said: 'I am now thinking about heat scanners at ports and airports. Using hotels as quarantine centres. Loudspeaker vans, SMS, radio. Health workers at ports, local law, cash ready for the public.'[280] At the same interview yet another respondent said:

> We have to illustrate why this is about more than health. The vital ingredients are 1. leadership; 2. risk communications – we must tell people so they don't panic; 3. logistics – we need to do a gap analysis – and 4. money. So: people, equipment, money essential.

Another attendee at a different event said:

> We must ensure that basic rights of people are not disrupted. There will be social chaos, information will be less than good, we need to consider the needy like pregnant women, and old people. […] We will need a process for burial and common prayers.[281]

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[277] I attended workshops in Lombok (27-29 January 2009), Batam (20-23 April 2009) and Bali (17-20 May 2009).

[278] Typical attendees included representatives of Dinas Pendidikan (Education department), PGRI (National Teachers' Association), PKK (Civil Service Family Welfare Movement), Organda (National Road Transport Operators' Association), Angkasa Pura (Department of Transport), Pelindo (state-owned seaport operator), Telkom (commercial network provider), Orari (amateur radio organisation), Rapi (citizen band radio), Bank Indonesia, PHRI (Hotel and Restaurant Association), DJ Imigrasi (Immigration department), BULOG (State Logistics Board), PLN (state-owned electricity utility company), Pertamina (state oil company), PDAM (water utility company), Kantor SAR (national social service & welfare organisation), PMI (Indonesian Red Cross), Tagana (Society for Disaster Management), the police, Kodam (Army group), TNI AU (Air Force), TNI AL (Navy), Satkorlak PBA (disaster management), Dinas Kebersihan (Hygiene department) and religious and media organisations.

[279] Interview, Batam, 21 April 2009

[280] Interview, Batam, 22 April 2009

Again the H5N1 risk constructions emerging at these pandemic planning conferences and, as their initiators and organisers had hoped, being disseminated from them, extended widely beyond that of a construction determined by medicine, science and rationality to involve political, humanitarian matters, as well as matters of emergency management and professional responsibility.

Another project, which also engaged with professional groups, involved religious leaders. This too, significantly extended bio-medical conceptions of H5N1 into a cultural domain. The project was originated by the UNICEF field office in Makassar, South Sulawesi, which approached the local chapter of the Council of Islamic Scholars (*Majelis Ulama Indonesia* - MUI), Indonesia's top Muslim clerical body, with a view to their members incorporating avian influenza related messages into speeches which are part of evening activities in Ramadan, the fasting month; into sermons which form an important part of prayers on Fridays and other holy days; and to contribute to a booklet which linked Islamic teachings on hygiene with avian influenza. Working through a local NGO, which had had previous contact with the MUI, UNICEF funded a series of workshops to develop the theme. A UNICEF staff member explained:

> In the workshops the idea was to provide the *ulamas* with background information on avian influenza and for them to package two key messages: 1. wash hands with soap; 2. separate poultry from houses. It was decided that the best way was to find suitable Koranic verses. These would be easier for people to accept and digest. It's important that the *ulamas* here have a good position. There is a strong Muslim presence here, very strong. Second, the community here is feudalistic and paternalistic. What the leader says will be obeyed. The *ulamas* know about this traditional culture.[282]

In May 2009, the booklet was approved by the National Council and the Ministry of Religious Affairs, and was distributed to mosques and religious organisations nationwide. One *ulama*, who had been involved in drafting the booklet, said:

> We were happy to help as asked by prominent UNICEF. We could also see a tangible explosion of AI – hundreds of thousands of chickens had died. People here have chickens as their life. Some depend on trading chickens. If chickens die they have no money. We could see that it was a problem [and] these messages are not contentious. Islam is always for progress and we are enthusiastic about using the respected position we have in society to promote hygiene and well-being.[283]

He went on to explain the process:

> During Ramadan we speak to men and women at the mosque and [afterwards] at home. There are maybe 50 people. We usually speak about Muslim behaviour – how to treat others, good conduct in daily life, strengthening faith, not to behave badly in crisis [...]. There is the general and the specific in the Koran. On disease, the Koran says: if disease is in one place, no one should go in or go out. The Koran says that if you

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[281] Interview, Lombok, 28 January 2009
[282] Interview, Makassar, 16 April 2009
[283] Interview, Makassar, 17 April 2009

> look after one person's soul, it is like looking after the soul of all. If you don't help one, you don't help all. In *Hadith*, Mohammad says prevention is better than cure. In *Hadith* Mohammed says God loves the healthy people so look after your health. […] The Koran is very general – it does not specifically say wash for health. The *ulamas* do interpretation. But there is a close relationship with personal hygiene and water. We cannot pray to God if we have not used water to wash. So working against bird flu [*flu burung*] is no contradiction with the teaching of Islam. Cleanliness is part of the faith. God is clean and likes the clean.

Among these groups, which put faith and religion to the fore, H5N1 risk constructions can again be seen to be incorporating and utilising social, cultural and political dynamics rather than denying or suppressing them. Similarly, there are no centralised, universalist prescriptions as to what modernity is, or should be.

9.6 Schools and communities

Like the media training and pandemic planning workshops, the schools programme was, self-evidently, set in a pedagogic, institutional environment. Designed to raise awareness amongst children, change their behaviour, and encourage them to transmit messages among their parents/carers and communities, it was considered an important component of the broader programme as many of the human victims of H5N1 in Indonesia are children and adolescents (Spicuzza et al., 2007). Following a series of focus group discussions with school children, three key messages were adopted: wash your hands with soap, don't play with poultry, and report sick poultry to parents and teachers. A teacher manual, a flip chart, school banners, comic books, stickers, and a video were subsequently developed and distributed to approximately 75,000 schools. The focus was predominantly on the worst affected areas of Java, South Sulawesi, Bali, and four provinces in Sumatra, with smaller-scale projects running in Papua, Maluku, Aceh, and East Nusatenggara provinces. Additionally, more than 1,400 specially-trained teachers working in UNICEF assisted CLCC (Creative Learning Communities for Children) schools attended workshops to receive orientation in delivering avian influenza related training to teachers. In the schools, how individual classes were conducted, and their content, was, however, left to the teachers. This resulted in a very wide range of activities. In language lessons, for example, children were encouraged to create and enact dramas, and write poems about avian influenza. In maths lessons, sums and numbers games involved poultry mortality. In music lessons, songs were created and sung, and in art lessons avian influenza related pictures were created. I even saw a physical education lesson that involved avian influenza related gymnastic activities.[284]

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[284] Sekolah Dasar Negeri 1, Tarung-Tarung, West Sumatra, 10 February 2009

In all, as detailed in chapter 3, I visited nine schools as part of researching this thesis, and do not claim this was a representative sample. My experience was doubtlessly biased towards some of the highest quality state schools in the country, staffed by some of the best trained and motivated teachers, and on many occasions it was evident that careful preparation had been made in anticipation a visitor from UNICEF head office in Jakarta. I was therefore often presented with a select set of performances. In one fifth grade Indonesian language class doing drama, for example, which was made up of 33 pupils in red and white uniforms, students first individually came forwards acting out being old and sick. They then performed their homework assignment which had been to write a story about avian influenza. A boy stood up and read: 'Title: "Thank God I did not get infected"' and in a bass voice, years beyond his age, tells of a woman who has influenza but does not know whether she has caught it from poultry as she can't remember having had contact with poultry. She explains this to her neighbour who says that they need to check the poultry. Having done this and determined that the chickens are healthy, they conclude that the woman's influenza is not avian influenza. At the end of the story, the teller repeats the title with emphasis, and a wipe of his brow.[285] It was a professional performance. In another class, third grade students worked on identifying avian influenza symptoms under the supervision of a health centre worker equipped with pictures of sick poultry. One group wrote (in Indonesian): 'comb is blue, sudden death, head is drooping, (difficult to breathe)'.[286]

There are few contestations obvious here regarding H5N1 risk, and an enthusiastic acceptance is evident of bio-medical, human health framed risk constructions. This might be expected in a well planned and well executed school class involving eight and nine year old children, but as was seen with the religious leaders involved in the programme, and with the professionals engaged in the pandemic planning workshops, the H5N1 risk communications programme both brought with it a construction of modernity that accorded with the aspirations of the group it was being deployed into, and reinforced and supported those aspirations. The CLCC schools in particular forcefully represent a rationalist, progressive construction of modernity that few who are engaged with them as teachers, students or parents/carers dispute. One small rural school in West Sumatra, for example, presented a *Dr Kecil* (Little Doctor) class, a weekly health themed activity, where the students wear special white coats. In a question and answer session, where the students are testing each other, one student marches to the front of the class and writes 'oseltamivir' [an antiviral drug, better

[285] Sekolah Dasar Negeri 1, Takmung, Klungkung Regency, Bali, 20 May 2009
[286] Sekolah Dasar Negari 2, Kecamatan Boyolangu, East Java, 12 March 2009

known by its trade name, Tamiflu] on the board in giving his answer – 'go to the *puskesmas* [health centre] and get oseltamivir' – to a question from one his classmates – 'what do you do if you get ill with bird flu?'[287] Similarly, many teachers are proud of the progressive force education plays and of the importance of the school in the community. One head teacher said:

> The school is a community as well as being part of the community and from the school you can change the community. You must remember that in most places in Indonesia the highest educational institution is the elementary school. So, to set an example, I put some new latrines at the front of the school, not at the back. I wanted them to be colourful too. What we do is not just about the facilities, it is also about changing the minds of the people.[288]

Another told of the utility getting avian influenza messages back to parents and families through school children:

> Surely there can be no better ways of promoting health messages than teaching them to children, who will take them home and pass them to their parents who do not have the advantages of such an education?[289]

With over 75,000 schools involved in the programme, tens of millions of school children across Indonesia have been involved, and a number continue to be, as well as their parents, carers and teachers. In this environment, powerfully constructed as the modern in the shape of education and progress, H5N1 risk has been constructed multifariously in hundreds of thousands of pictures, poems, stories, dramas and games, and has extended widely beyond that of risk constructions determined by a purified science. Again social, cultural and political dynamics can be seen to have been incorporated into the process rather than excluded or suppressed.

Community work

'Community awareness and empowerment' activities took many forms across the country. *Tanggap Flu Burung* ('Take Action on Bird Flu'), which was launched nationwide in September 2006, served as the catch-phrase for the campaign. It included public concerts, billboard advertising, and the production and distribution of leaflets and other materials. Prominent was a four month radio and television campaign consisting of four light hearted 30 second public service announcements (one for each of the four key messages) introduced by a well known talk show host, and celebrity road shows and social events, which also featured in television news reports. A senior UNICEF official in Jakarta said:

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[287] Sekolah Dasar Negari 2, Kecamatan Boyolangu, East Java, 12 March 2009
[288] Interview, Tulungagung, 12 March 2009
[289] Interview, Banten, 19 February 2009

> It is important that we are not forcing anyone to do anything. We have a vision and we want people to subscribe to that, but there are no sanctions if they don't. We'll put on a concert, hang a *Tanggap* banner over the stage, make a speech and hand out stickers, but the main idea is just to let people have a good time. Much of it is awareness raising, don't forget. You can't just ram a message down someone's throat and expect them to swallow.[290]

In May 2007, the campaign was expanded to involve distributing AI kits, give aways containing masks, gloves, soap, banners, stickers, a booklet and video compact discs to community leaders in over 100,000 villages in H5N1 affected areas, primarily on Java. Objectives included developing village action plans, rules and policies; enhancing skills at village level health centres, district health offices, planning offices, veterinary and animal husbandry operations, and in sub-district and village administrations. These manifested in workshops for village leaders, health workers and other government officials; sub-district and village level meetings; recruiting and training voluntary animal health personnel; supporting the production of locally produced communication materials such as booklets and flyers; private sector engagement (e.g. avian influenza themed place mats for factory canteens), and outbreak simulations. A 'village workshop' is described below. The intention is to show how it, like many other elements of the communications programme, encouraged rather than excluded social dynamics, particularly political issues.

At eight in the morning on 5 February 2009, the front office of Telekom Krui in Pesisir Tengah, a hamlet on the south-west coast of Sumatra, six hours drive from the provincial capital, Bandar Lampung, was a jumble of computers, cables, video cameras, projectors, voltage stabilisers and microphones. A half a dozen young men, some of whom had travelled from as far as Yogyakarta in Central Java, were busily setting up for an avian influenza 'participatory learning and action' (PLA) event, the centre piece of which was a three-way video conference, via the internet, with the governor's office in Bandar Lampung, and the regent's office in Liwa. The other sponsors, as proclaimed on a large banner hanging over the low stage to one side of the room, along with UNICEF, were Bakti Husada (a provincial health organisation), Speedy Broadband Access, the Darmajaya Informatics and Business Institute, Radio Komunitas Suara Petani Lampung Barat, and Jaringan Radio Komunitas Lampung.[291] By

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[290] Interview, Jakarta, 23 January 2009

[291] There are currently over 300 community radio stations in Indonesia, which are joined in a loose federation (http://suarakomunitas.combine.or.id). They date from 1998 reforms which saw strict government control of broadcasting liberalised. Their main objective is the democratisation of broadcasting, promoting broadcasting 'by, for and about the community'. Current legislation allows them to operate on three FM frequencies at a maximum power of 50 watts, giving them a reach of around 2.5km. The station in Krui broadcasts a mix of music and speech and has about 1,000 regular listeners, a quarter of who contribute financially.

ten o'clock the communication system was pronounced ready, and around 20 local residents, half male and half female, who had been individually invited, were sitting on mats on the floor. A few minutes later, a dozen sub-district administrators, in khaki civil service uniforms, arrived. A facilitator from the local community radio station took the stage to gather questions that would be put to the recently elected politicians. 'We must say that we need livestock officers in this area,' suggested one participant, 'they say we have to report, but who do we report to?' Another asked: 'Why can't we eat chickens that have died of avian influenza? It is a waste just to throw them away'. Other questions included: what are the symptoms of avian influenza, and how do we prevent it? Can we eat the eggs from infected chickens? Will the government pay compensation to bury people who have died from avian influenza? From the outset, the stage was set for a political event.

At eleven o'clock a link was made with Bandar Lampung. The governor was not present, but the vice-governor was, along with a ten or so officials. The conference room, with its pale sofas and glass souvenir cabinets, was a startling contrast with our more modest location. The facilitator put the questions individually, with a polite apology preceding each. Almost without exception, the answers that came back were anodyne, unhelpful and in some cases misinformed, with some long pauses and uncertain whispered consultations, and there were no follow up questions. Rapid death was the symptom to look out for in poultry, it was suggested. Humans would get ill (*sakit*) if they got infected. Infected poultry and eggs should not be eaten, even if well cooked. Questions related to improved facilities and agricultural support were responded to by long explanations related to budgetary limitations. More livestock officers would be provided (and compensation provided for human deaths) if funds were made available by the national government. What was most important, according to the officials in Bandar, was that the province was making sure than any expenditure was efficient and economically prudent. There were many other calls on the budget, and avian influenza was not an emergency like a tsunami. The problem would go away if people were patient.

It was hard to judge the mood of the room when the conference ended. The technicians were ecstatic that they had more-or-less pulled it off. The facilitator was full of praise for the governor's office for finding the time to listen to the concerns of the 'little people' (*wong cilik*). The local residents commented how well (i.e. overweight) the officials looked, and how splendid their conference room was. 'We can admire how prosperous they all looked,' commented one. There was no evident criticism of the lack of concern or engagement that had been demonstrated regarding avian influenza by the officials, or for the fluffed and vague answers. Due protocol had been observed by all parties, but the process, distinctly

modern by virtue of the telecommunications technology, had also been distinctly political. The elected leaders had been scrutinised, been made aware of people's concerns, and – I think it is fair to say – been found wanting.

After lunch, the local officials drove off and the attendees were divided into two groups. One group (made up of men) was to draw a map of the village on a large piece of paper showing where avian influenza outbreaks in poultry 'might be possible'. The other group (of women) was to make a poster of the most important 'healthy behaviours'. The men, largely under the direction of one dominant character, quickly sketched out the two roads in the village, and the main landmarks – the mosque and the market. This was compared with a map available on the internet, and the question was raised as to why they were engaged in map making when much better ones were available online. The facilitator replied that they were to mark where the avian influenza hot spots were. There was a brief discussion among the group and quickly two rectangles were marked on the map – the location of two relatively small commercial poultry farms, which were the only reason for poultry, or poultry products, to be moved in or out of the area. This group displayed little deficiency as to knowledge related to poultry disease. To them it was obvious that the more poultry there were in any one location, the greater the risk of the disease was, and the notion of the disease being carried into area from outside was also prevalent.

The women were more hesitant, less directly facilitated, and no apparent leader emerged. After 45 minutes or so, they had boiled their important messages down to four: (1) be careful of avian influenza ('*hati-hati flu burung*'); (2) be aware of symptoms, if you have a fever it might be avian influenza; (3) if you are ill, go to the health centre; and (4) if you go to the health centre, don't forget your free treatment card if you have one. Again the event can be seen to have dominated by bio-medical public health orientated risk constructions, but political discourse was not suppressed. Much discussion among the group, for example, focused on whether it was true that medical treatment was free for human H5N1 cases, and if so, who paid if you presented at the health centre, but were subsequently determined not to be suffering influenza caught from a chicken. The consensus was that it was impossible to separate normal influenza from avian influenza, except that the symptoms were worse, and that diagnosis would probably be rigged to ensure that the patient would have to pay. The perennial issue of the difficulty of obtaining the official low income health charge waiver certificate was also much discussed.

For the women of Pesisir Tengah, then, H5N1 risk is constructed as the possibility of needing costly medical care, which should be available for free, as much as suffering illness in

itself. In its own terms, the event can be cast as a success: awareness of a bio-medical, public health framed H5N1 risk construction was increased. In the terms of the argument of this thesis, this occurred because dynamic issues of power, politics and culture were not suppressed or excluded by purified scientific risk constructions.

9.7 Conclusion

The UNICEF/KOMNAS H5N1 risk communication programme stands in significant contrast to the cases presented in the previous two chapters. Compared with the practical, visible matters discussed in chapter 7 involved with regulating domestic poultry keeping and changing commercial slaughtering and marketing practices, or those of chapter 8 involved with the scientific detection of a specific virus, this chapter has described and analysed a multifaceted programme with the relatively vague objective of 'raising awareness' of something called *flu burung* (bird flu). As the Knowledge, Attitude and Practice (KAP) studies which accompanied the programme showed (such studies being an inevitable end point of a 'deficit' model based approach, and widely critiqued as a poor measure of actual behaviour), the programme was both a success and a failure, and it was impossible to disentangle the effects of one component from another, or separate the effects of initiatives run by other agencies. Doubtlessly however, awareness was raised across Indonesia; and in a number of cases, behaviours did change, in one way or another, for a period of time. Raising awareness is a loose and vague matter compared with changing behaviour; and quite different from processes involved with enforcing unwelcome regulations in a commercial context or policing for a specific scientifically defined virus.

Flu burung also proved to be a usefully vague and flexible term to work towards raising awareness of. A purified construction of the H5N1 virus definitely had relations with it, and a scientific bio-medical construction of the virus as a disease threat significantly funded and shaped the risk communications programme, but as the programme developed, extending through a range of diverse and plural networks, there was no insistence that a purified risk construction should exclude any others, or dominate. Importantly, issues of culture, politics and power were not excluded, suppressed or denied, but were recognised by the programme and incorporated, or carefully avoided. Opinion leaders – journalists, teachers, religious figures – were identified and engaged with, and more challenging matters of commercial activities were passed over or ignored.

Fundamentally, however, with purified, scientific risk constructions distant, and even deliberately held remote, very many people – all manner of professionals, school children and

those living in different ways in different places – were, very largely, able to construct *flu burung* as an assemblage that suited them. Alongside a risk construction of the H5N1 virus as a generic but lethal poultry disease, for journalists and citizens it became an issue focusing demands for better government and medical care, and even an opportunity to generate improved social cohesion. For pandemic planners it became part of their professional competence and responsibility, and for school children it became all manner of things, even play. In this, the term 'multidimensional' used by one of the senior officials involved with the programme, is apt, and telling. By adopting a multidimensional approach which did not exclude different and diverging types of knowledge, and which actually fostered and encouraged multiple, multifarious risk constructions, often embroiled with the dynamics of culture, politics and power, the risk communications programme demonstrates the flexibility and plurality required to find middle ground between the purified constructions of science and the dynamic and variable constructions of society. Eluding a purified, centralising, universalist rationality, constructions of both risk and modernity were able to emerge from a wide variety of local settings which were fitting and appropriate for those settings. Among other concluding comments, the next and final chapter considers what such a flexible, multidimensional approach might bring to the more challenged matters of restructuring Jakarta's market chains and H5N1 surveillance.

10. Conclusions and reflections

> '… the more that something becomes some *thing*, the more it is entangled with others.'
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> (Hinchliffe, 2007:175)

10.1 Introduction

This thesis has examined a 'capricious' influenza virus in action, globally and in Indonesia. My intention has been to bring a conceptual perspective to bear on the question of why the response to the H5N1 virus has been challenged in Indonesia. The virus has been shown to have generated significant international concern, which manifested in Indonesia as an extensive and wide ranging set of response measures led most significantly by UN technical agencies, motivated and funded by globalised concerns that the virus might cause a deadly and economically costly pandemic. The response was uncritically adopted by the national government in Indonesia, a large, culturally complex and rapidly developing country, with a politically powerful poultry industry, and where many people keep poultry at home. The virus, however, has spread and persisted, and H5N1 continues to cause regular outbreaks of disease in poultry, along with occasional cases in humans, mainly children and young adults. Little concern is evident among the Indonesian population regarding the risk of pandemic influenza, and among those who keep poultry, the identification of one specific pathogen among the many that cause disease in birds has been shown to be of little importance. The industrial poultry sector has remained remote from the response and continues to operate outside government regulation. The virus in action therefore presents a valuable opportunity to investigate the interactions of a set of interventions based on, and driven by, globalised principles, with a population who are living with the H5N1 virus on a daily basis, and demonstrate little concern regarding it.

The analysis of this thesis shows that the response to the virus has been led by modernist conceptions promoting, and dependent on, reductive scientific and governmental rationalities which take little account of the multiple cultural, social and political factors involved in the spread and persistence of the disease. In particular, a significant challenge to the H5N1 response has been shown to arise from the tendency of rationalist, governmentally orientated policy processes and institutional arrangements to treat the virus as a matter of nature, amenable to scientific measurement and control. Viewable as nature, politics and/or discourse, the virus in action in Indonesia shows that any divide between nature and culture, science and politics and/or knowledge and power, is artificial and deceiving. The basic premise of Enlightenment-based approaches to modernity as represented by an internationally led

universalistic response is therefore flawed. An effective and equitable response requires not just an understanding of the scientific nature of the virus, but also of the cultural, social and political environments in which the virus is in action, and the interactions between them. Responses to the H5N1 virus in Indonesia therefore need to accept and incorporate more plural understandings which take into account the multifarious hybrid risks constructed around the virus, which mix purified scientific understandings with the dynamics of culture, politics, and power.

In this final chapter, I will review my empirical findings and reflect on the wider implications for the response in Indonesia, and globally. First I return briefly to the conceptual underpinning of the thesis, and the empirical questions for investigation that were drawn from them.

Risk, modernity and H5N1 – the conceptual questions

Fundamental to my conceptual approach is a constructivist orientation. This accepts that knowledge rests on social factors, not on an independent reality. Risk cannot be an absolute, but is defined, perceived and managed according to principles inherent amongst particular groups. Risk is consequently understood to be fluid and multidimensional, the product of historical events and social forces, and may be deployed as a means to legitimise power by creating fear and forcing norms, defined by the most powerful interests, on others. The focus of this thesis therefore has rested on contrasting the H5N1 risk constructions that have driven the response, particularly the modernist assemblages of science, and the knowledge-power dynamics involved in the mingling of scientific and governmental rationalities, with the assemblages of the people living in Indonesia, who are affected by the virus. From this conceptual orientation, my empirical investigations were designed to answer the following questions:

- What groups are involved with the H5N1 virus and what risks do they construct around it?
- Do different groups construct risk differently, or are risk constructions similar?
- Are any dissonances or contestations over different risk constructions evident, or are any constructions dominant or excluded?
- What types of knowledge-power relations are involved in claims to authority in constructing risk?
- What constructions of modernity are prevalent in the groups affected by H5N1, and the groups responding to it?
- Are these related to H5N1 risk constructions, and if so, how?

- Are any groups suggesting that the H5N1 virus should be addressed as a purified matter of nature, and denying the relevance of politics and power?
- Are any hybrid constructions of risk evident, or denied, and are these related to particular groups?

In response to these questions, the following section first considers the constructions of risk and modernity evident in the groups designing and implementing the H5N1 response in Indonesia, and contrasts these with constructions evident amongst the Indonesian population. The section then examines more specifically the findings of the three cases studies that formed chapters 7, 8, and 9. Following that some broader reflections are offered as to some possible ways forwards in reconfiguring the attitude, actions and events of the response.

10.2 Responding to H5N1

The overlapping multiplicities and complexities of life in Indonesia are discussed further below, but in responding to the questions above, the thesis has tracked constructions of risk and modernity amongst two main groups: those charged with responding to the H5N1 virus, and those whose lives are involved with poultry and so are cast as objects of the response. As was shown in chapters 4 and 6, among the international agencies charged with ameliorating the situation in Indonesia, and their civil service partners at national and sub-national levels, the risk constructed around the virus focuses on it as a biological pathogen presenting a threat to human health on global and local scales, and a more localised threat to poultry health and rural livelihoods. In this, the influenza virus, inherently unpredictable in its viral mutations and reassortments, presents a significant challenge to rationalist efforts to quantify and predict the risk associated with it. Nevertheless, constructing modernity as an ordered world free from disease, and the virus as purified object of nature amenable to measurement by science and control through rational governmental intervention, a wide ranging set of response measures have been deployed with the intention of detecting and eradicating the virus in the environment and limiting its opportunities to infect humans.

The three interventions I examined in the case studies presented in chapters 7 – 9 are discussed below in the context of the thesis questions, but underpinning all my analysis is the finding that very few people in Indonesia, especially those who have regular contact with poultry, associate any risk to human health with the virus. As only a few hundred people out of the millions who have daily contact with poultry have been infected with H5N1 over the course of nearly ten years, practical everyday experience militates against H5N1 constructed as a risk to human health, especially in circumstances where other threats to health and well being are prevalent. These include volcanic eruptions, earthquakes, tsunamis and a range of

deadly diseases, including malaria, dengue fever and TB. Similarly, the virus constructed as a threat to poultry health finds little concurrence amongst those keeping poultry, who have wide ranging experience of poultry disease, and mortality, and a range of mechanisms for dealing with the related economic losses. The opinion, which I heard constantly in the course of my investigations, that: 'A dead chicken is just a dead chicken. What does it matter why it died?' sums up the position of many poultry keepers. Amongst these groups, modernity is a complex, multi-faceted, flexible and plural work in progress. Most relevant to my investigations regarding constructions of modernity prevalent among the people of Indonesia, however, is the widespread scepticism, derived from centuries of colonial exploitation and more recent decades of incompetent and corrupt authoritarian government, that any government activity is designed to benefit the population. The spectacular rise of democracy following the upheavals of 1998 is introducing new and sometimes unexpected dynamics into this arena, but old attitudes persist, often with good reasons, and as a result, the constructions of modernity evident amongst those designing and implementing the H5N1 response, and those it is directed at, are often at variance. For many people living in Indonesia, government authority is to be avoided or ignored. This sets a significant practical challenge for the H5N1 response in Indonesia, but as will be discussed below, a further set of more complex conceptual concerns are also relevant.

The case studies presented in chapters 7 – 9 showed how these broad constructions played out and interacted in encounters linked to three aspects of the H5N1 response: restructuring Jakarta's poultry market chains, H5N1 surveillance, and risk communications. In chapter 7 we saw how a governmental rationality, in the form of new regulations for Jakarta's daily consumption of one million birds to pass through five new industrial slaughtering units rather than arrive live for slaughter at thousands of markets across the city, failed to instigate change, whilst regulations directed at controlling and limiting domestic poultry keeping had a significant effect on reducing the number of birds being kept by residents in the urban area. In response to the thesis questions concerning the groups involved, and any contestations or concurrences involved in their constructions of risk and modernity, this case showed how one major actor-network, Jakarta's government, translated the internationally constructed risk of H5N1 as a threat to human health into modernist ambitions to impose rationalist order in the capital, and how this found broad acceptance among the city's residents. Among the myriad actor-networks involved with poultry commercially, however, neither the underlying risk construction, nor the more explicit construction of modernity, found any concurrence, and the new regulations were ignored or contested. Those working with poultry had extensive

practical experience that conflicted with the construction of H5N1 as a risk to human health, and given the scepticism, discussed above, concerning the objectives and intentions of any government interventions, a risk construction emerged in the markets, slaughterhouses and on the farms in which the regulations themselves constituted a greater threat than the virus. The reformed market chains would disrupt the livelihoods and social identities of thousands of people working in established ways, and challenge the power and prosperity of a small number of influential traders and commercial entities.

Further to these challenges, given that a small number of human deaths in the capital resulting from H5N1 infection, widely reported in the media, had resulted in temporary but catastrophic drops in poultry consumption, all the actors in the commercial supply chains had significant interests in suppressing any construction of risk around the virus. Government intervention designed to create a modernist ideal of order was therefore further challenged by social, cultural and political factors, in particular a highly competitive commercial environment characterised by uneven power relations amongst actors in the supply chain. Concerns over livelihoods and corporate profits suppress discourse constructing H5N1 as a danger to human health, but the burden of disease remains pressing on the poorest and least powerful – poultry farmers. By way of contrast, no commercial practices were affected by the regulations directed at domestic poultry keeping, and with social dynamics constructing modernity as an urban area free from scavenging poultry, the population of the city was prepared to change its behaviour and comply. Regarding the final two sets of questions identified above, related to any scientific purification of the risk that might be evident, and the involvement of hybrid elements concerning politics and power, a purified bio-medical construction of H5N1 risk can in this case be seen to have been hybridised by the Jakarta city administration to incorporate explicitly political dimensions, associated with modernist conceptions of order and control. This provoked a similarly explicit and hybrid political response from the groups which would be disadvantaged by the new regulations.

In chapter 8, we saw how a scientific rationality, in the form of an extensive H5N1 surveillance project, which was designed by an international technical agency, funded by international aid agencies, and implemented through the national and regional offices of the Indonesian agriculture ministry, was in many places confounded. In this case, a technical response function – the culling of infected and uninfected animals to prevent spread of the virus – was shown to result in risk constructions that inhibited reporting and worked against the objectives of the project. Responding to the thesis questions concerning the groups involved, and any contestations or concurrences involved in their constructions of risk and

modernity, it is clear in this case that the designers of the intervention, and perhaps even more significantly the agencies funding it, were both motivated by, and dependent on, a highly purified risk construction focused exclusively on the H5N1 virus as a bio-medically defined entity. For this tight-knit actor-network, modernity was overwhelmingly constructed as science deployed for the benefit of humankind. Amongst the wide ranging domestic and small scale commercial rural poultry keepers that were the objects of the initiative, this purified scientific rationality, focused on quantitative technical test results designed to detect a specific pathogen, was shown to be irrelevant. As mentioned above, those groups that have everyday contact with chickens and other birds associate no risk to human health with them, and given their extensive experience of poultry husbandry, and poultry disease and mortality, in the rural areas where the initiative was implemented, the risk of H5N1 quickly became constructed as the unwelcome culling of birds that could follow a positive test result. Again, in the Indonesian context, where modernity constructed as the extension of governmental rationality largely fails, the involvement of government officials in such events further compromised them.

We can also see in this case how a purified H5N1 risk construction hybridised to incorporate cultural and political factors involving social identity and power dynamics, which were ignored, denied and suppressed by the designers of the initiative. From the perspectives of 'backyard farmers', surveillance visits presented no benefits, only the unwelcome arrival of officialdom, along with a significant risk of culling. Given the persistence of poultry disease, caused by H5N1 or other pathogens, such responses also appeared insufficient or misguided. From the purified perspectives of the scientist designers, 'backyard farmers' were, then, easily cast as ignorant and recalcitrant. In this, the designing agencies can themselves be seen to be influenced by social, cultural and political factors, including explicit pro-poor agricultural development objectives, and more implicit internal social dynamics associated with maintaining their own cultural and social identities. Critically, in the conception and design of the project, this led to a failure to engage with the commercial poultry industry, despite its implication in the spread and persistence of the virus.

In implementation, social, cultural and political matters were also shown to confound purified scientific objectives in that it often proved politically difficult to carry through the culling response with the rigour and precision the designers of the project intended. Conceptually, this case demonstrates the impossibility of separating a purified scientific approach from the complexities and compromises of politics and power. Significant social and cultural matters that had little to do with the virus as a bio-medical entity were shown to be relevant in the surveillance response. A purified scientific construction of the H5N1 risk, that

promotes the virus as a natural object separate and remote from people and politics proves to be untenable not only among the people affected by the virus, but also among those charged with controlling it.

Chapter 9 presented a case in a different register to those of the previous two chapters. Examining a set of 'risk communication, information and public awareness' initiatives deployed nationwide into communities and professional groups, schools, and via mass media, the objectives - 'raising awareness of bird flu' - were shown to be more vague and flexible. As the programme was implemented through a wide ranging set of networks into a wide range of different groups, it was shown to be plural and diverse. Drawing on different types of knowledge, it encouraged rather than suppressed multiple risk constructions, and incorporated rather than excluded social, cultural and political factors. In the terms of the thesis questions identified above, relating to the groups involved with the initiative, and the power dynamics involved in any contestations and concurrences over different constructions of risk and modernity, the programme was shown to be founded on globalised bio-medical constructions of the virus as a threat to human health, and its objectives, beyond the stated ambitions to 'raise awareness', to be focused on reducing opportunities for the virus to move from animals to humans. In this, along with a model that sees a 'deficient' population requiring education in 'hygienic' practices, it shares many similarities with other modernist and prescriptive public health orientated communications programmes. On the ground, however, deployed essentially into the entire population, there is little evidence of the governmental rationality that has been shown to be involved with regulations addressing the restructuring of the poultry market chains in Jakarta; and in place of the scientific rationality that drove the surveillance project, a determinedly multidimensional approach allowed, and even encouraged, hybrid risk constructions to emerge amongst a wide range of diverse groups. The constructions of risk and modernity that were evident amongst the designers of the programme hinged on post-Enlightenment conceptions of rationality, and an ordered world free from disease, but there were no explicit sanctions directed at those who did not comply. Initiated nationally, but enacted locally, and designed to work around commercial interests rather than disrupt them, the risk communications programme posed few challenges to social identity, and explicitly accepted political factors in its design and implementation. In dynamic Indonesian settings, the initiatives therefore became driven more by social dynamics than by distant scientific or governmental authority. Escaping purified, centralising, universalist rationalities, hybrid constructions of both risk and modernity were able to emerge.

These three case studies have therefore shown how, in Indonesia, different groups construct different risks around the H5N1 virus, and how these are linked to different constructions of modernity. Groups involved with the internationally defined response, constructing H5N1 risk as a potential influenza pandemic, have been driven by modernist conceptions dependent on a reductive rationality that treat the virus as a matter of nature, amenable to scientific measurement, and control by way of rationalist governmental intervention. This purified construction of H5N1 risk finds little concurrence amongst the people of Indonesia, where overlapping cultural, social and political factors create a dynamic assemblage of modernity, and multiple dynamic constructions of H5N1 risk. In such circumstances, a universalistic approach, which itself has been shown to involve inherent hybridising social and political factors, will inevitably be challenged.

What, then, do these findings imply for future efforts to create effective disease control responses? The concluding section offers some thoughts on what might be required in order to design and implement more effective and equitable policies to address the H5N1 virus in action in Indonesia and reflects on wider global implications.

10.3 Implications for the future

Over nearly two years as I worked on the field research for this thesis, collecting reports and interviews from over 200 people, and talking informally with more, I was most forcefully impressed by the great range and diversity of people involved the H5N1 virus, and the variety of their practices. Even within the relatively limited geographical scope that my research in Indonesia moved to focus on – Java primarily, with extensions into Sumatra, Sulawesi and Bali – the variety of actors and their interests and concerns never ceased to surprise me. I have interviewed people who describe themselves as independent poultry farmers, for example, with flocks ranging from ten to 150,000 birds. Some had technical degrees from prestigious universities; others had not finished elementary school. Now, in the final stages of writing up, as I attempt to anonymise my sources, as promised, presenting them as ‘types’ rather than as individuals, this overlapping multiplicity repeatedly challenges my attempts towards categorisation. I interviewed a very senior government official, for example, who is also, proudly, a ‘backyard farmer’, and who spoke to me in both roles. I also interviewed an academic veterinarian, who runs a nucleus farming operation in his spare time, and breeds song-birds as a hobby. I also interviewed a contract poultry farmer, whose water comes by bucket from a well by her house, but who also has a small business renting motor vehicles. One certain thing can be drawn from this, I suggest, and that is that any effective response to

H5N1, and indeed other zoonotic diseases, must take account of this multiplicity, and seek solutions that are relevant and acceptable to all sorts of diverse needs, knowledges and priorities. Accepting this, and that any solutions will therefore become political, a negotiation to find balances between varying interests, is crucial. In Indonesia, the suppression of political perspectives has been one of the most unfortunate consequences of a purified reductive, rationalist, universalist approach.

Three of my most well-triangulated empirical findings are relevant here. First, across all the diverse groups and individuals concerned with poultry and H5N1 in Indonesia, powerful commercial factors are at play. Whether concerned with the share value of a transnational corporation, or the need to sell a bird to buy shoes, the stark imperatives of profit, or survival, are paramount. This has been a feature of the poultry industry since the late 19th century, when it first industrialised. With little capital required to start in the business, and disease increasingly prevalent, better informed, or better capitalised, actors have always moved from the uncertainties of farming into the more dependable businesses of providing feed and chicks (Smith and Daniel, 2000). As discussed in chapter 6, this is the case in Indonesia, where a small number of large companies make big profits from feed and chicks, and a large number of small enterprises growing meat, struggle. If the powerful integrated poultry companies put their weight behind any proposals for change, the future of the virus would look different, and engaging with these influential groups is critical to addressing the persistence of H5N1 infection. This is, however, a charged political matter. Accepting this, and acting on it is vital. As things stand, as long as consumer behaviour is unaffected by H5N1, these groups actually stand to benefit from H5N1 outbreaks amongst technically less well equipped, or well capitalised, farming operations. The question is how to engage with these groups, and this matter is self-evidently an Indonesian one, that needs to be addressed in Indonesian terms.

A second well-triangulated finding, which is related to the commercial imperatives of the industry, is a widespread tendency for discourse about H5N1 in poultry to be suppressed, in order to maintain consumer confidence. This could of course change fast. Ten fatal human H5N1 cases in Jakarta, Medan, Surabaya or any other town, in one week, would quickly result in another collapse in poultry meat sales, and similar statistics repeated over one or two months would quickly see significant changes in the way that industrial broilers at least are supplied to urban areas. In this, consumers, who to date have been totally neglected in any aspect of the H5N1 response, can be seen to have significant power. If they decided collectively not to purchase poultry from wet markets, for example, there would be a rapid reformation of the system. To a degree, this is already happening as increasing numbers of

people shop in the mini-markets, supermarkets and hypermarkets that are springing up all over Indonesia's urban areas. The pace and direction of change will be different in rural areas, but in ten or 15 years, few wet markets are likely to exist in large Indonesian cities, except perhaps as 'heritage' sites. Again, the issue is an Indonesian matter, and a political one, but if consumers engaged, a new and potentially potent dimension of debate and action would open up. Critical to this, of course, is discourse and discussion, and these need to be encouraged rather than closed down.

A third central finding is that any government interventions in the Indonesian countryside, and elsewhere, are treated, at best, with suspicion. Small farmers involved in poultry farming are particularly sceptical, and given the historical context, they have many reasons to be so. Again this is a political matter, and I suggest here that the political dynamics of these interactions need to be as well recognised by the project designers and senior officials in the national and regional headquarters of the agriculture ministry, as they are by their staff on the ground. The relative success of the multidimensional risk communications initiative examined in chapter 9 suggests some ways forwards in allowing the people most concerned with the problem to define it. First, if government activities were broadened to encompass all aspects of poultry health, rather than being focused exclusively on H5N1, they would be more congruent with interests and concerns in the villages, and find better acceptance. The USDA office in Indonesia has argued persistently for such an approach, but found its case subsumed by international concerns focused on the H5N1 virus. In some regions such as West Sumatra, for example, there is also evidence of broader, less purified approaches. Secondly, it needs to be recognised that any attempts to technically surveille for the virus, which is essential towards any understanding of the situation, locally, nationally, or globally, will be hopelessly compromised by a culling response, and that even if funding were available for timely compensation, the complexities of assessing and delivering it equitably and consistently, let alone the moral hazard associated with offering it, effectively precludes it. Here I would suggest making H5N1 rapid test kits available to all poultry farmers and hobbyists across Indonesia, not necessarily free of charge, but at an affordable price, and providing some incentive for reporting results, positive or negative, with a guarantee that no official interventions would follow, unless requested.

This would however involve science in surrendering some of its purity, superiority and supposedly apolitical authority, and this, I suggest, would be a positive first step towards a more flexible and humble science that is prepared to accept a multiplicity of perspectives and concerns, and acknowledge the mutable and contested nature of the H5N1 virus and its

effects. Fundamentally, it needs to be recognised by those working within the scientific domain, and those looking in from outside, that the reductive epistemological position of science, which attempts to create knowledge by objectively measuring nature, is just one of many perspectives, and has no automatic authority compared with other perspectives and interests. Science needs to accept the inevitability of a multiplicity of perspectives, and the involvement of culture, power and politics in their construction. Without this, a dangerous rigidity follows, with alternative ways of understanding being ignored, suppressed, or obscured, and an iterative process of deliberation and learning, which is essential for coping with such uncertain and dynamic situations as those involving an influenza virus, being precluded. But this, for the scientists at least, is a political analysis with unacceptably political consequences.

Global dimensions

This analysis holds true beyond Indonesia, of course, as does my suggestion that a multiplicity of entwined social, cultural and political matters need to be not just considered but given priority in understanding the causes of diseases and designing and implementing responses to them. This is not a novel position (c.f. Farmer, 1999; 2005), but in the case of zoonotic diseases – diseases that are transmitted from animals to humans – I would argue that these contextual factors are more easily suppressed, and purified scientific constructions, which unhelpfully close down rather than open up explanations and response options, are allowed to dominate more easily. Yet, if these animals provide food, and particularly if industrial scale food systems are involved, there will inevitably be socio-economic issues involved, and even emotional ones. A Canadian or an Egyptian broiler bird might be genetically identical to an Indonesian or an Indian one, and the pathogenic virus might be identical, but contexts, priorities, politics and concerns will vary from place, and any disease response that does not accept this will be more challenged than one that does.

In the international domain, the issue has equally potent political dimensions, which need to be acknowledged. As the 2009-10 H1N1 ‘swine flu’ pandemic demonstrated, a novel influenza virus will spread worldwide within weeks, if not days. In these circumstances, a further set of questions emerges as to the future role and involvement of the established international organisations in responding to global disease threats, particularly as the modernist, universalist conception of a global public good that has underpinned their activities for the last 50 years gives way to more complex political framings. As economic and political power continues to shift from established to rising nations, the authority of such groups, their

funding sources, and their assumed rights to intervene, will come in for increasing scrutiny and debate. In this respect, H5N1 in Indonesia provides a potent example of a broader set of issues of vital relevance for the future.

Just as development is now no longer a transition from the traditional to the modern, a catch up game played in the footsteps of industrialisation, and globalisation is no longer a one way, imperialist process of westernisation, global risks now require a wider range of perspectives and conceptualisations. Indonesia's withholding of human H5N1 virus samples between 2007 and 2009, arguing that they would be used to make vaccines that would be unaffordable to Indonesia, indicates the nature, scale and importance of possible future debates and contestations. To the UN's credit, the global response to H5N1 has been steered by an imaginative and relatively light touch entity, UNSIC, and more broadly, an examination of established practices in addressing zoonotic diseases is emerging in the shape of what is often referred to as 'One World, One Health', an initiative focusing on the interactions of animal, human and environmental health.[292] Here, the analysis of this thesis suggests that these groups will need to embrace the explicitly varied and political dimensions of the problems, especially if such emotional issues as nations' food security are to be incorporated into the agenda. The research required to inform such movements will therefore need to involve new, and nimble, interdisciplinary mixings of natural and social science; and in implementation, diplomats, sociologists and political scientists will be required as well as doctors, virologists and veterinarians. Respect for others' points of view, humility, reflexivity and flexibility in thinking will also be required. In other words, a hybrid response is needed, that does not just bring things into more substantial being by entangling them, but which creates novel and unexpected forms. Our world now is not just more connected, but increasingly dynamic and fast changing, and the influenza virus provides an invaluable example of how we need constantly to be prepared to be taken by surprise.

New, or revised, institutional structures may also be called for, and here, for the last word on how we might usefully proceed, I turn to an Indonesian perspective. Giving the keynote address at the World Economic Forum in Davos on 27 January 2011, Indonesia's President, Susilo Bambang Yudhoyono, proudly listed the country's achievements '…the world's third largest democracy, the largest economy in Southeast Asia, a key growth area in the world economy, and soon… to have one of the largest productive workforces in Asia'.[293] He

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[292] See: http://www.oneworldonehealth.org; http://www.onehealthinitiative.com; http://www.onehealth2011.com [accessed 1 May 2011]

[293] Source: http://www.weforum.org/sessions/summary/speech-big-shift-and-imperative-21st-century-globalism [accessed 28 April 2011]

moved on to argue the pressing need for a new '21st century globalism' which 'does away with dogmatism' and is 'open-minded, pragmatic, adaptive and innovative'. Proposing a form he called 'partnership networks … with built in flexibilities to account for differences', over more formal 'alliance systems', the President may have identified the outline of an appropriate structure to address the global issue of H5N1, and other zoonotic diseases.

11. Appendices

11.1 Interviewees and respondents

With reference to the interview dates and locations given in the footnotes, a typology of interviewees and respondent is presented in order to preserve anonymity, as was assured. In certain circumstances, a non-anonymised list of sources is available on request.

Date	Location	Interviewee
30 January 2008	Rome	FAO official
11 March 2008	Brighton, by phone	FAO official
13 May 2008	London	senior OIE official
9 June 2008	New York	senior UNICEF official
11 June 2008	Washington DC	US State department officials
13 August 2008	Jakarta	international virologist
16 August 2008	Majalengka	song bird keeper
18 August 2008	Majalengka	market shopper
21 August 2008	Bogor	senior KOMNAS officials
26 August 2008	Jakarta	FAO consultant
28 August 2008	Jakarta	senior KOMNAS official
28 August 2008	Jakarta	international diplomat
28 August 2008	Jakarta	WHO official
24 December 2008	Jakarta	FAO consultant
23 January 2009	Jakarta	UNICEF official
28 January 2009	Lombok	PKK official
9 February 2009	Banten	head teacher
19 February 2009	Banten	head teacher
12 March 2009	Tulungagung	teacher trainer
15 March 2009	Jakarta	resident
14 April 2009	Jakarta	NGO director
16 April 2009	Makassar	UNICEF official
17 April 2009	Makassar	UNICEF official
17 April 2009	Ambon	local journalists (group interview)
20 April 2009	Batam	senior KOMNAS official
21 April 2009	Batam	BULOG official
22 April 2009	Batam	Kantor SAR official

12 May 2009	Jakarta	senior KOMNAS official
9 June 2009	Jakarta	market shoppers and traders
25 June 2009	Tangerang	domestic poultry keeper
11 August 2009	Solo	large independent poultry farmer
9 September 2009	Jakarta	poultry industry executive
16 September 2009	Jakarta	retired feed industry executive
23 September 2009	pers. corr.	senior journalist
9 October 2009	Majalengka	occasional poultry keeper
10 October 2009	Majalengka	domestic poultry keeper
16 October 2009	Mojokerto	domestic poultry keepers
17 October 2009	Majalengka	occasional poultry keepers
17 October 2009	Majalengka	poultry shop owner
17 October 2009	Jakarta	FAO official
18 October 2009	Mojokerto	contract and domestic poultry keeper
21 October 2009	Jombang	domestic poultry keeper
24 October 2009	Bantul	retired domestic poultry keeper
24 October 2009	Yogyakarta	veterinarian and nucleus director
25 October 2009	Yogyakarta	veterinarian
31 October 2009	Bekasi	contract and domestic poultry keepers
31 October 2009	Bekasi	contract and domestic poultry keepers
3 November 2009	Surabaya	domestic poultry keepers
3 November 2009	Medan	domestic poultry keeper
3 November 2009	Surabaya	specialist poultry breeder
4 November 2009	Medan	domestic poultry keepers
8 November 2009	Bekasi	contract and domestic poultry keepers
9 November 2009	Airlangga	contract and domestic poultry keepers
11 November 2009	Jakarta	senior FAO official
3 December 2009	Jakarta	FAO consultant
21 December 2009	Jakarta	Jakarta agriculture office official
9 January 2010	Bogor	small scale independent poultry farmer
13 January 2010	Ancol	feed industry executive
20 January 2010	Depok	poultry industry journalist
27 January 2010	Depok	market trader
29 January 2010	Bogor	nucleus farm director

30 January 2010	Bogor	poultry broker
31 January 2010	Bogor	independent farmers' representative
2 February 2010	Bogor	poultry slaughterhouse worker
5 February 2010	Jakarta	USDA officials
5 February 2010	Jakarta	international virologist
8 February 2010	Jakarta	IT consultant
8 February 2010	Jakarta	senior KOMNAS official
8 February 2010	Jakarta	senior ministry of agriculture official
8 February 2010	Jakarta	feed industry executive
9 February 2010	Jakarta	senior governance advisor
9 February 2010	Jakarta	FAO official
9 February 2010	Jakarta	international virologist
11 February 2010	Jakarta	senior KOMNAS official
12 February 2010	Jakarta	feed industry executive
12 February 2010	Jakarta	poultry industry journalist
13 February 2010	Jakarta	senior ministry of agriculture official
22 February 2010	Padang	senior regional agriculture department official
22 February 2010	vicinity Padang	regional agriculture department veterinarian
22 July 2010	Bogor	regional avian influenza coordinator
6 August 2010	Bogor	conference attendee
6 August 2010	Bogor	senior ministry of agriculture official
4 September 2010	Jakarta	political economist

11.2 Acronyms and abbreviations

AFD	*Agence Française de Développement* (French International Development Agency)
AGAH	Animal Production and Health Division (FAO)
AI	avian influenza
AIDS	acquired immune deficiency syndrome
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Development
BSE	bovine spongiform encephalopathy
BULOG	Indonesian national logistics agency

CBAIC	Community-Based Avian Influenza Control
CDC	US Centers for Disease Control
CJD	Creutzfeld-Jakob disease
CLCC	Creative Learning Communities for Children
CMC	Crisis Management Centre
CMU	Central Management Unit
CPI	Charoen Pokphand Indonesia
CVO	Chief Veterinary Officer
DAI	Development Alternatives, Inc.
DFID	UK Department for International Development
DGLS	Directorate General of Livestock Services
DINAS	Local District Livestock Service
DKI	*Daerah Khusus Ibukota* (Special Capital Region of Jakarta)
DO	delivery order
DOC	day old chicks
EC	European Commission
ECTAD	Emergency Centre for Transboundary Animal Diseases
EID	Emerging Infectious Disease
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
EU	European Union
FAO	UN Food and Agriculture Organization
GAR	Global Alert and Response
GDP	Gross Domestic Product
GIDEON	Global Infectious Diseases Epidemiology Online Network
GISN	Global Influenza Surveillance Network
GLEWS	Global Early Warning and Response System
GOARN	Global Outbreak Alert and Response Network
GPHIN	Global Public Health Intelligence Network
GTZ	*Deutsche Gesellschaft für Internationale Zusammenarbeit* (German International Development Agency)
H5N1	influenza virus subtype
HHS	US Department of Health and Human Services
HPAI	Highly Pathogenic Avian Influenza

HIV	human immunodeficiency virus
IBRD	International Bank for Reconstruction and Development
ICASEPS	Indonesian Center for Agriculture Socio-economic and Policy Studies
IDS	Institute of Development Studies
IHR	International Health Regulations
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
IPB	*Institut Pertanian Bogor* (Bogor Agricultural University)
IT	information technology
IPAPI	International Partnership on Avian and Pandemic Influenza
KOMNAS FBPI	Indonesian National Committee for Avian Influenza Control and Pandemic Influenza Preparedness
LDCC	Local Disease Control Centre
LPG	Liquified Petroleum Gas
MMR	measles, mumps and rubella
MUI	*Majelis Ulama Indonesia* (Indonesian Council of Islamic Scholars)
NGO	Non-Governmental Organisation
NIHRD	National Institute for Health Research and Development (Indonesia)
NSP	National Strategic Plan for Avian Influenza Control and Pandemic Preparedness
NSWP	National Strategic Work Plan for the Progressive Control of Highly Pathogenic Avian Influenza in Animals
OECD	Organisation for Economic Co-operation and Development
OFFLU	OIE/FAO Network on Animal Influenza
OIE	World Organisation for Animal Health
PCR	polymerase chain reaction
PDSR	Participatory Disease Surveillance and Response
PHEIC	Public Health Emergency of International Concern
PLA	Participatory Learning and Action
PPLPI	Pro-Poor Livestock Policy Initiative
PPP	Purchasing Power Parity
PSA	Public Service Announcement
RT	*Rumah Tangga* (local administrative office)
SARS	severe acute respiratory syndrome
SBY	(President) Susilo Bambang Yudhoyono

SHOC	Strategic Health Operations Centre
STEPS	Social, Technological and Environmental Pathways to Sustainability
TAD	Transboundary Animal Disease
TB	tuberculosis
UK	United Kingdom
UN	United Nations
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNSIC	United Nations System Influenza Coordinator
USA	United States of America
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VPH	Veterinary Public Health
WAHID	World Animal Health Information Database
WHO	UN World Health Organization
WIC	World Influenza Centre

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