

**The International Response to Highly
Pathogenic Avian Influenza:**

Science, Policy and Politics

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ACRONYMS

ASEAN	Association of Southeast Asian Nations
CIDRAP	Center for Infectious Disease Research & Policy, University of Minnesota
CMC-AH	Crisis Management Centre for Animal Health
EC	European Commission
ECTAD	Emergency Centre for Transboundary Animal Diseases
EMPRES	Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases
EPR	Epidemic and Pandemic Alert and Response
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
GF-TADS	Global Framework for the Progressive Control of Transboundary Animal Diseases
GIS-AID	Global Initiative on Sharing Avian Influenza Data
GLEWS	Global Early Warning and Response System for Major Animal Diseases, including Zoonoses
GOARN	Global Outbreak Alert and Response Network
HPAI	Highly Pathogenic Avian Influenza
IATA	International Air Transport Association
IHR	International Health Regulations
IPAPI	International Partnership on Avian and Pandemic Influenza
NGO	Non-Governmental Organisation
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OFFLU	OIE/FAO Network of Expertise on Avian Influenza
OIE	World Organisation for Animal Health
PIC	Pandemic Influenza Contingency
PPE	Personal Protective Equipment
PVS	Performance, Vision and Strategy
SHOC	Strategic Health Operations Centre
SFERA	Special Fund for Emergency and Rehabilitation Activities
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNSIC	United Nations System Influenza Coordination
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USCDC	United States Centers for Disease Control and Prevention
WFP	World Food Programme
WHO	World Health Organisation
WIC	World Influenza Centre
WTO	World Trade Organisation

1. INTRODUCTION

On June 11th 2008 another outbreak of highly pathogenic avian influenza (H5N1) was reported in Hong Kong – the site of the first reported human deaths from this virus in 1997. Media reports portrayed the possibility of a major catastrophe. Anxious citizens stopped eating chicken. With China hosting the Olympics in a matter of weeks, concerns were raised in the highest circles about the consequences of an outbreak – for world profile and for business. Politicians wanted firm action. On June 20th, officials proposed a package of US\$128 million to put the small-scale poultry sector and wet markets out of business. Traders have rejected the proposal, and many consumers argue that the alternative frozen supermarket chickens are not what they want. Others argue that attempts at regulating imports and banning wet markets are futile. Informal, unregulated trade abounds, and with South China being a known, if poorly reported, hot spot of avian influenza virus circulation, the chances of keeping Hong Kong free of the disease are very small indeed. Yet, sceptics argue that the proposed measures are more about political grandstanding and public relations than sensible, science-based control policies. They argue that the net consequences for farmers', traders' and poorer consumers' livelihoods will be negative, with only the well-connected large suppliers and supermarkets benefiting. But, given the fears around viral mutation into a form capable of efficient human-to-human transmission, others conclude that precaution, even if drastic, is the most appropriate route¹.

This example highlights the complex trade-offs involved in policy processes around avian influenza. These are intensely political, pitting different interests and groups of actors against each other. Public image, business interests and poor people's livelihoods are all involved in a complex mix. And the science often is so uncertain that firm decisions based on exact predictions and precise measures are impossible. Judgements – normally political judgements – are made, and these are necessarily highly contextual. Media pressure, political effectiveness, implementation capacity and geopolitical positioning all come into the picture.

Thus, in order to understand the politics of the international policy response to avian influenza, we must explore an intersecting story of virus genetics, ecology and epidemiology with economic, political and policy machinations in a variety of places – from Hong Kong to Washington, to Jakarta, Cairo, Rome and London. This paper offers one, necessarily partial and incomplete, view of the story over

¹ Economist June 28 2008, http://www.economist.com/world/asia/displaystory.cfm?story_id=11622415; see <http://www.info.gov.hk/info/flu/eng/index.htm>

the last decade – and particularly the last few years when over \$2 billion of public funds have been mobilised. It is a fascinating and important story. It is important because the HPAI story is seen by many as a ‘dress rehearsal’ for a major pandemic emerging from a zoonotic disease, whereby a combination of viral genetic change and ecological circumstance results in transmission of a new disease among humans, with devastating consequences. The 1918 human influenza pandemic killed at least 50 - 100 million people globally². Estimates for future pandemics vary widely, but a simple calculation sees three times that number given the world’s increased population³. And we are of course in the midst of the catastrophic pandemic of HIV/AIDS which had its origins as a zoonosis, and which, for a range of reasons, was not spotted early enough and spread widely. Between 1940 and 2004 over 300 new infectious diseases emerged, some 60 per cent of which were zoonoses from animals⁴. That a pandemic influenza strain has not yet emerged from the H5N1 virus currently circulating, at least at the time of writing this paper, is no reason for complacency. An influenza pandemic will happen, it is argued convincingly - some time, somewhere - and we had better be ready for it. For this reason, exploring the successes and failures of the avian influenza response to date is an important task.

The avian influenza response story is fascinating because it offers insights into some wider dilemmas surrounding animal health, production and trade, public health, emergency responses and long-term development, and the global governance of all of these. As with many high-profile policy debates, there are multiple, competing policy formulae and diverse, sometimes conflicting, intervention responses. There are a vast range of actors, associated with numerous networks, often cutting across sectoral boundaries, public/private divides and local, national and global settings. Avian influenza has caused a massive mobilisation of public funds, involving numerous agencies and resulting in countless initiatives, programmes and projects. Yet there has been often remarkable collaboration across what had previously been deep organisational and professional divides. There has also been a range of organisational innovation and experimentation. These offer important insights into what to do – and indeed what not to do – in the future.

In other words, the avian influenza response offers some important perspectives on some of the ‘big issues’ of the moment. These include, for example, how to respond to uncertain threats which have transnational implications; how to cut across the emergency-development divide, making sure crises result in longer term responses as well as dealing with immediate needs; how to balance interests and priorities between ensuring health and safety as well as livelihoods; how to

² Johnson and Müller (2002). As the iconic event of the past century, around which much media and policy discussion has centred, the 1918 pandemic has been the subject of intense research, ranging from social histories to technical assessments (cf. Morens and Facui 2007; Taubenberger and Morens, 2006; Taubenberger et al 2005).

³ Murray et al (2007) offer a more sophisticated analysis.

⁴ See, for example: Woolhouse 2008; Jones et al, 2008; Webster et al 2007; Woolhouse and Gaunt 2007; Woolhouse and Gowtage-Sequeria 2005; Woolhouse et al, 2006; Webster 2002.

operate effectively in a complex multilateral system, within and beyond the UN; what a commitment to ‘security’ in health and livelihoods really means in practice; and much, much more.

These are of course all massive, and highly contentious, issues, and this paper will not provide any neat and tidy answers. What it aims to do instead is, through an analytical lens which looks at the politics of policy processes, shed light on these issues, sharpening the questions raised and the trade-offs implied. As the global avian influenza response moves towards a bigger, overarching ‘One World, One Health’ agenda, focusing on the intersections of animal, human and ecosystem health proposed at the December 2007 Delhi inter-ministerial meeting⁵ and being elaborated for the 2008 Sharm El-Sheikh international ministerial conference, these issues become even more pertinent. We are interested in asking: given the lessons of the international response to date, what should be the features of an effective, equitable and resilient response infrastructure at the international level? In essence, what should a ‘One World, One Health’ initiative look like in practice?

2. THE INTERNATIONAL RESPONSE: 1997-2008

There has now been more than a decade of experience since the Hong Kong avian influenza H5N1 outbreak of 1997 when 18 people were infected and six died. Since 2003 245 people are reported to have died from infection with this virus across the world, with mortalities highly concentrated in a few countries, mostly in South East Asia⁶. The avian virus has spread across most of Asia and Europe, with regular, usually seasonally-defined, outbreaks in poultry. In some countries – and the list varies, but always includes Indonesia, China and Egypt – the disease has become endemic among bird populations. In response to these outbreaks over two billion poultry have been culled, affecting the livelihoods and businesses of millions⁷. Thus, while a major human pandemic has thankfully not occurred, the disease and the consequences of the resulting policy interventions have been far reaching and, in certain contexts for certain people, dramatic. Figure 1 offers a map of the spread of the virus across the world.

⁵ See Wildlife Conservation Society 2004, http://www.wcs.org/sw-high_tech_tools/wildlifehealthscience/owoh for an early exposition of the ‘One World, One Health’ concept. See also <http://www.oneworldonehealth.org/> and <http://www.wcs.org/5060651> for details of the ‘Manhattan Principles’.

⁶ For date to 10 September 2008, see: http://www.who.int/csr/disease/avian_influenza/country/cases_table_2008_09_10/en/index.html. For useful reviews, see MacKellar (2007) and Parry (2007).

⁷ World Bank (2005); (2005a); McKibben and Sidorenko (2006).

Figure 1. Confirmed occurrence of H5N1 in poultry and wild birds since 2003

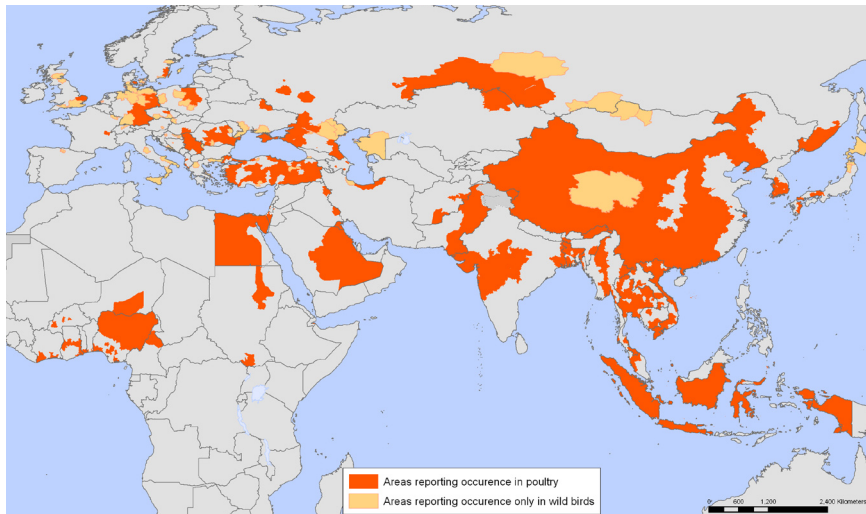
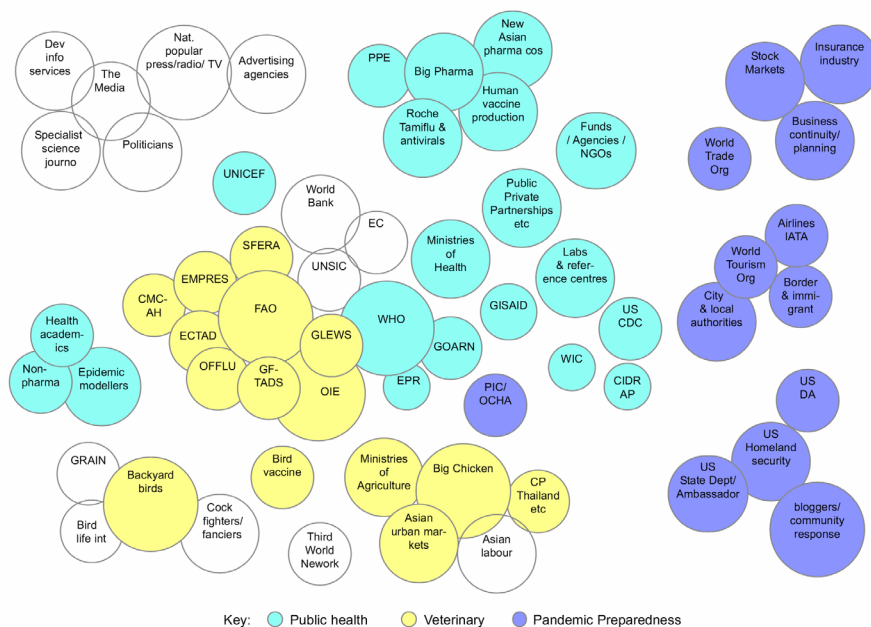


Figure 2. The international avian influenza response: an actor-network diagram



The H5N1 avian influenza virus has thus had a substantial impact. How then has a minuscule virus, made up of a few strands of RNA and a protein coating which might, or might not, have a devastating impact on human populations, influenced policy and practice globally? Appendix 1 shows two timelines stretching over the period since 1997, with a number of key moments identified.

Biological, economic and policy processes are mutually intertwined, co-constructing the response. Epidemiological processes of spread – through wild birds, trade or poor market hygiene – are influenced by policies which result in mass culls of poultry, banning wet markets, or imposing import regulations. In different settings these measures may restrict spread – or actually increase it, as they drive activities underground. What has happened in practice is highly dependent on the way different contexts affect this interplay between biology, economic interests and policy. In some parts of the world – notably in Europe, but also in Thailand, Hong Kong, and, for a time, Vietnam – policies have influenced disease incidence and spread in ways that have seen intermittent outbreaks being controlled and managed increasingly effectively. In other places, this has not been the case, and the disease has become endemic, with regular outbreaks occurring, and little likelihood of eliminating the virus⁸. In terms of the global policy response, it is the former context – of controlled virus and stamping out of intermittent outbreaks – that has dominated thinking and practice, while the latter context – of an endemic disease situation – has been largely ignored – or denied.

As figure 2 highlights, concerns in many quarters rose as the disease spread from isolated outbreaks in South East Asia – first to central Asia, then to Europe and Africa. The speech by US President George Bush in September 2005 to the United Nations indicated strongly that the US was taking this very seriously⁹. In the post 9/11 world where threats to US homeland security could arise from terrorism and infectious disease – and potentially deadly combinations of the two – the spectre of a major pandemic rang alarm bells. As a US government official put it.

In the wake of 9/11 scenario and the transformation of the institutional response capability within the US, we were looking at a sort of all hazards approach, and how the White House sees that with homeland security, it was kind of natural to see this potential threat in a broader context and to respond to it in a fairly robust manner... Also the sensitivity to criticism that came out of Katrina lent the whole White House focus a sharp edge. We don't want to be criticised like that again so we really need to do a good job on this... It is one of our high priorities because this is a presidential initiative and the president has an interest in what is going on...there's the White House, the Homeland Security Council, that's a sort of national security council, and they've had the primary lead, and it's a real lead. If something happens it's homeland security. It's very much in a security framework¹⁰.

⁸ Food and Agriculture Organisation (2007a); Sims (2007).

⁹ <http://www.whitehouse.gov/news/releases/2005/09/20050914.html>

¹⁰ Interview, Washington DC, 11 June 2008.

Another continued:

Now 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 government took place because of the fear of a 1918 style epidemic. And I've been at meetings in the White House where it was said that the scenario of 1918 was not necessarily the worst case - mortality, morbidity and so on. So what drove this? I think we just have to be frank – it is the fear of a severe human pandemic.... No matter how much we prepare there are huge concerns out there and electorates can be very unforgiving.... There are limits to how much you can do to prevent these kinds of things from happening. The limits changed for us on 9/11. Now we are a lot more concerned about terrorism, but you could argue that it still is not enough if you want to have perfect security. It's the same with preparing for a pandemic. You can always put more in. But governments have to make decisions, they have to manage risks, and I think this is a risk that the US government, possibly more than any other government, has accentuated to the world. This is a serious risk we have to prepare for¹¹.

An unforgiving electorate, an anxious population and a media that fed off ever more terrifying disaster scenarios was a potent mix. The UN was concerned too. What would happen if an influenza pandemic really did occur? How would national and international systems cope – and how would the UN respond? Across Asia, Europe and the US there was very real concern: "Governments thought a pandemic was around the corner. Really, ASEAN heads of government were particularly concerned"¹². Concerns were also being raised by country officials, as well as UN, World Bank and other agency staff based particularly in south-east Asia. This provoked high level discussions among the Deputy UN Secretary General and the then Secretary General, and David Nabarro was appointed 'UN System Influenza Coordinator' in September 2005. Estimates of huge potential mortalities made at the time of his appointment provoked a major furore among the technical agencies, but it certainly resulted in the raising of the profile of the issue among a wider constituency, moving the debate from concerns at the 'periphery' right to the centre of the global system¹³. This was accelerated by the arrival of H5N1 in Europe and human cases in Turkey in January 2006. The possibility of a major pandemic looked to be potentially just around the corner.

But there was not one single political motivation for action. Different pressures and influences arose on different sides of the Atlantic. In the US, as already mentioned, the 'homeland security' and 'bioterror' angle was critical. But so was, according to some, lobbying from pharmaceutical business interests, keen to create new market opportunities from the avian influenza crisis. This dynamic took a different complexion in Europe, however. As one informant argued:

¹¹ Interview, Washington DC, 11 June 2008.

¹² David Nabarro, review comment, August 2008.

¹³ Bird Flu 'Could Kill 150m People.' BBC Online 30 September 2005 <http://news.bbc.co.uk/1/hi/world/asia-pacific/4292426.stm>

The EU, of course, sees harmonisation among member states as key. While market drivers are there, the pharma industry in Europe is more established, stable. They are worried about the politics of the Union: the two-speed Europe. Avian influenza was a very useful basis for mending political fences – dealing with the aberrations of a two-track Europe. Fake urgency helped bring things together. It helped push the political process forward¹⁴.

So, while policy narratives were being constructed in the context of 'big politics', this intersected with more technical debates. In 2005 a series of models were produced which showed the potential of spread from isolated outbreaks, and the importance of control and containment measures of various sorts (Longini et al 2005; Ferguson et al 2005). At the same time scientific assessments of the H5N1 virus showed its variability and the potential for rapid change. While couched in cautions and provisos, these emerging findings provided further impetus towards a concerted response. Business interests got in the act too. The anti-viral oseltamivir (Hoffmann-La Roche's Tamiflu) was presented as an important stop-gap measure, reducing the impact of the virus in infected individuals. Governments quickly ordered stockpiles and the public sought supplies from any source¹⁵. Meanwhile vaccine manufacturers went in search of an elusive vaccine solution – one that would deal with seasonal influenzas as well as potential pandemic strains, at least until a more targeted one could be developed¹⁶.

In 2005 the new International Health Regulations were published in response to the crisis¹⁷. These allowed for direct intervention at source in response to globally threatening disease situations. They also required a more streamlined and effective reporting system, building on the successful response following the SARS outbreaks of 2002-03. As discussed in more depth below, the IHR 2005 signalled 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 (cf. Heymann 2006).

The Beijing inter-ministerial pledging conference, held in January 2006, provided a focus for the growing global effort. US\$1.8 billion were pledged, and the main technical agencies – the UN World Health Organisation (WHO), the UN Food and Agriculture Organisation (FAO) and the Office International des Epizooties (OIE)

¹⁴ Interview, Geneva, 5 March 2008.

¹⁵ <http://www.guardian.co.uk/business/2005/oct/20/birdflu>

¹⁶ see Stöhr and Esveld (2004).

¹⁷ Fidler (2005b).

¹⁸ One plan (A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza, 2005, later revised 2007) focuses on the animal health aspects and was led by FAO and OIE, with inputs from WHO, see: Food and Agriculture Organisation and Organisation International des Epizooties (2005); Food and Agriculture Organisation (2007b). Another from WHO (Responding to the Avian Influenza Pandemic Threat: Recommended Strategic Actions) focuses on public health aspects, see: http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_05_8-EN.pdf, which is currently under revision.

– came up with a series of plans and strategies prepared for the conference¹⁸. Whilst the issue had been live before, it was at this point that the ambitions and activities of the international response significantly scaled up. This has taken many forms in different places.

Much of the core work has focused on the veterinary response, controlling 'at source' with the aim of both reducing socio-economic impacts on poultry production as well as reducing human exposure. As veterinarians argued, dealing with avian influenza was not new. They had standard approaches to controlling disease outbreaks which had been tried and tested over many years. What they needed now was more support for doing what they knew how to do already. Thus, as discussed below, standard culling, compensation, vaccination and market restructuring programmes were initiated in line with OIE and FAO guidelines. On the human public health side, programmes focused on drug and vaccine supply and delivery were combined with large scale public education and communication programmes to reduce infection and transmission risks, led by WHO and UNICEF, together with a range of NGOs¹⁹. In addition, human pandemic preparedness plans were developed across the world, with 109 country plans completed (if not tested) by the end of 2007²⁰. In different sectors and across agencies, scenarios were developed and contingency plans were tested, with UN agencies – UNOCHA (now incorporating PIC) and WFP in particular – often taking the lead.

In sum, there has been a huge amount of activity, and considerable expenditure of resources – totalling way beyond the formal pledged commitments if the wider costs incurred by private companies and industry groups are included in the totals. This has involved large numbers of people, spread across diverse organisations in all parts of the world. What can we learn from all this? This paper does not aim to offer a detailed description of what, where and when, but to probe into the underlying rationales and drivers of different policies and actions. Understanding the policy process involves asking a series of interrelated questions (cf. Keeley and Scoones 2003):

- ◆ First, what are the narratives – the storylines²¹ – which define the way the disease problem is understood and the way the response has unfolded? In other words, how are both problems and solutions framed, and through what mechanisms?
- ◆ Second, who are the actors involved in these narratives and how are they linked? How do they align – or not – with the main policy narratives being promoted? And how do they align with different interests – professional, organisational, political, commercial?

¹⁹ World Health Organization (2005) (2006) (2007).

²⁰ http://www.un-pic.org/PIC/pages/report_overall.aspx

²¹ Policy narratives are stories told in policy debates. They have clear beginnings (defining the problem), middles (expanding on the context and challenges) and ends (elaboration of solutions).

◆ Third, in this process and over time, what policy spaces open up – and what spaces are closed down? What moments of debate, dispute and dissent exist – over what and between whom? And how do these spaces (or lack of them) affect what can be done?

◆ Finally, overall, we want to ask who wins and who loses through these processes? Whose version wins out, whose gets excluded, and why? And what other narratives, actors and interests exist with different perspectives, and how might these have influence in framing a future One World, One Health initiative?

3. ACTORS, NETWORKS AND NARRATIVES: UNPACKING THE INTERNATIONAL RESPONSE

The international response has been dominated by what might be termed an overarching 'outbreak narrative' (cf. Wald 2008). This has a number of recurrent features which, in turn, create a particular style of policy and politics. A central feature is public fear and worry which permeates public and media debates. This often involves the construction of 'the other' – dangerous places and people from where diseases come from, and something to be feared. Another feature of outbreak narratives focuses on western anxieties about globalisation – that we are all connected, and can all be affected, by diseases or other disasters that spread across the globe. In addition, there is often an assumption that outbreaks emerge from disrupted, primordial settings which are pushed 'out of equilibrium'. This is linked to concerns about protecting the conditions of modernity, where disease is controlled, unlike in the primitive, backward, unregulated contexts where diseases emerge. Cutting through all of this is a politics of control and enforcement by the state – or global bodies with state-like characteristics – that at once constructs and justifies imposition and authority – by authorised, sanctioned expertise or, at the extreme, military-style force. All of these features of 'outbreak narratives' (Wald 2008) are present in the avian influenza experience. Understanding how these ways of thinking, talking and presenting ideas in public, academic and policy discourse is essential to unravelling how particular policy processes in particular places emerge.

In today's world, of course, the media – in all its forms – has a major role to play in constructing these biopolitics²², and so framing the narratives and practices of response. At the peak of the HPAI crisis, the global media had a field day²³. Feeding

²² Following Foucault, biopower involves the application and impact of power on human life and the body, with biopolitics being the intersection of politics and the life sciences (Rose 2006), see: <http://en.wikipedia.org/wiki/Biopolitics>

on a climate of fear, anxiety and uncertainty in the post 9/11 world, journalists could construct some dire storylines. These were replete with disaster metaphors, conjuring up a politics of fear and blame. In tracing this process up to mid 2005, Nerlich and Halliday (2007) identify an article on human-human transmission in the *New England Journal of Medicine* in January 2005 as a key trigger (Ungchusak et al 2005). This was accompanied by an editorial by Klaus Stöhr (2005), then Coordinator of the Global Influenza Programme of the WHO, that was picked up by the *New Scientist* and the *British Medical Journal* the same week. These narratives of fear were of course reinforced by the speculative predictions and projections about potential mortalities, and the doomsday picture painted of collapsed economies, dying millions and a very personal, individual struggle to get hold of vaccines, drugs or safety equipment. So for example from around the time of Nabarro's September 2005 appointment the following are a small sample of the top headlines, all in reputable publications:

'On a wing and a prayer': Millions of people killed in highly developed countries within months. Tens of millions worldwide. The global economy in tatters. A Hollywood fantasy? No – it's now a plausible scenario. The first act, the spread of avian flu to, and probably between, humans, has already started across Asia. Unless the international community now moves decisively to mitigate this pandemic threat, we will in all probability pay heavily within a few years. Then, hard questions will be asked as to why we were not prepared²⁴.

'Bird flu 'could kill 150m people: Experts fear birds will carry the virus across borders'. A flu pandemic could happen at any time and kill between 5-150 million people, a UN health official has warned. David Nabarro, who is charged with co-ordinating responses to bird flu, said a mutation of the virus affecting Asia could trigger new outbreaks. "It's like a combination of global warming and HIV/Aids 10 times faster than it's running at the moment," Dr Nabarro told the BBC²⁵.

'Bush seeks military option on bird flu': President Bush, stirring debate on the worrisome possibility of a bird flu pandemic, suggested dispatching American troops to enforce quarantines in any areas with outbreaks of the killer virus. Bush asserted aggressive action could be needed to prevent a potentially crippling US outbreak of a bird flu strain that is sweeping through Asian poultry and causing specialists to fear it could become the next deadly pandemic. Citing concern that state and local authorities might be unable to contain such an outbreak, Bush asked Congress to give him the authority to call in the military²⁶.

²³ For example, a timeline search of the Google News archive reveals the patterns of press interest since January 2004.

²⁴ Nature 435, 385-386 26 May 2005 <http://www.nature.com/nature/journal/v435/n7041/pdf/435385a.pdf>

²⁵ BBC ONLINE: Friday, 30 September 2005 <http://news.bbc.co.uk/1/hi/world/asia-pacific/4292426.stm>

²⁶ The Boston Globe: By Jennifer Loven, Associated Press, October 5, 2005.

This only touches the surface. The blogosphere and the Internet discussion sites offer another whole dimension. Here conspiracy theories and dire scenarios abound – and feed off each other, in a frenzy of outbreak narratives of many sorts²⁷.

While of course it is impossible to attribute cause and effect in complex policy processes, many people commented to us that the media, and popular books on the subject, have had an impact on the framing of the policy debate. US President George Bush had reputedly been influenced by the book 'The Great Influenza: The Story of the Deadliest Pandemic in History' by John Barry, while another well-read popular book, 'The Coming Plague' by Laurie Garrett, together with pieces in *National Geographic*, *Newsweek* and *Time* magazine, added to the deluge of commentary. In science-policy circles the coordinated publication of special issues by *Foreign Affairs* and *Nature* in 2005 added to the waves of interest and concern. A *Foreign Affairs* comment piece by Michael Osterholm, director of the Center for Infectious Disease Policy and Research at the University of Minnesota, was particularly well read (Osterholm 2005a)²⁸. That the technical debate in the scientific journals of *Cell*, *Science* or *Nature* offered a more circumspect, uncertain and confused story, with highly conflicting models and predictions, did not really matter too much²⁹. Headlines matter and policies almost necessarily have to follow a simple narrative storyline – beginning, middle, end; if this is the problem, then this is the solution. News coverage, and so political profile, does matter, across the spectrum of actors involved in the avian influenza response. The technical agencies are not immune. While they argue that it is only the science that justifies their position, the fact that an issue on their patch is in the media spotlight has consequences for profile, exposure and, ultimately, funding.

²⁷ Here is a sample from the blogosphere: "We are playing musical chairs. 300 million people and 3 million chairs", quote by NS1; "Attempting to prepare the US for a pandemic by making specific recommendations for the government to implement is like trying to cure anaemia by bleeding the patient. The cure for what ails this culture is more self-reliance; we aren't going to get there by having the government do things we ought to do for ourselves", quote by LMWatBullRun; "It will take more than 'good men' to get us out of this JIT jam. Those good men at the top must also be courageous, smart, informed, and lucky. We face the two most formidable opponents in all of recorded history - an urbanized human race with all of its current psycho-social weaknesses and a developing panflu that more than likely will sputter to life with breadth and depth", quote by Medical Maven; "Fail to plan = plan to fail. Each of us to some extent is planning for the pandemic, but BROTHER are most of the rest planning to fail! Folks have talked about calling this the "Black Flu" or the "China Flu" or the "Boyd Flu". I may start talking about the "Ellie Flu" after 'Deep Impact', y'know where they're talking about ELE- Extinction Level Event...Maybe it would more accurately be the CEE flu - Civilization Ending Event", quote by LMWatBullRun. All from PANDEMIC FLU INFORMATION FORUM -<http://www.singtomeohmuse.com/index.php>. See other blog and wiki sites, some more measured than others: www.fluwikie.com/index.php; <http://afudiary.blogspot.com/>; <http://birdflujourney.typepad.com/>; <http://crofsblogs.typepad.com/h5n1/>; <http://www.planforpandemic.com/>.

²⁸ See also Garrett (2005) and the follow-up issue (Osterholm 2007; Garrett 2007).

²⁹ Yamada et al (2008).

In different ways, then, an outbreak narrative dominated across a range of actors and networks. In the context of the avian influenza response, not just one outbreak narrative, but three were important. Each is associated with a particular grouping of people, professions and processes. In the next sections of this paper we look at the following trio:

- ◆ First, a strong narrative linking veterinary concerns with agriculture and livelihood issues: “it’s a bird disease – and affects people’s livelihoods”. The responses have centred on veterinary control measures and industry ‘restructuring’, with the OIE and FAO being at the centre of the actor-network.
- ◆ Second, a human public health narrative which certainly dominated the media and political concerns: “human-human spread is the real risk, and could be catastrophic”. Here a combination of drugs, vaccines and behaviour change were seen to dominate the response, one very much centred on the WHO, with UNICEF and a number of NGOs being important players too.
- ◆ Third, a narrative focused on pandemic preparedness: “a major economic and humanitarian disaster is around the corner and we must be prepared”. Responses focus on civil contingency planning, business continuity approaches and containment strategies. Here, a much wider network of business/industry players and consultants are concerned, linked to different branches of government, notably prime ministers’/presidents’ offices and finance ministries with concerns about the fallout of any pandemic. The humanitarian community – UN agencies, the Red Cross, development NGOs and others – are also important.

Such narratives compete for attention in the policy process. One informant put it succinctly: “We’ve got David Nabarro drawing a picture of a spectre that is going to engulf the world, and you’ve got vets saying ‘you can say anything you like, but it is about chickens’³⁰. Figure 2 offers a diagrammatic interpretation of the constellation of actors involved in the international response. Clearly there are more actors than this, especially those only tangentially engaged, but this diagram is our attempt to map out the actor network based on the extensive interviews undertaken. Our study has primarily focused on the international public response and so underplays the array of actors and interactions within the private sector.

In subsequent sections each of these actors and their associated networks will be introduced. At this broader level, however, the diagram offers an insight into a number of important features, pertinent to our broader analysis:

- ◆ Actors coalesce around the three core outbreak narratives described above. These are distinct actor networks, associated with some lead agencies and key people. But they are not wholly separate: they come together in a number of important bridging

³⁰ Interview, Washington DC, 12 June 2008.

organisations. On technical issues, the nexus around WHO, FAO, UNICEF and OIE is of course important, with UNSIC playing a key coordinating role, particularly on financial and wider policy issues. On financing, the World Bank has come to play quite an important, bridging role too.

- ◆ The diagram highlights the sheer number of initiatives – and associated acronyms – that the HPAI response has either spawned or expanded. While no new big coordinating body has been established, as with UNAIDS, it is striking how many initiatives cluster around the core organisations at the centre of the diagram; as someone put it “like bees around the honey pot”.
- ◆ The cluster of actors around ‘the media’ and ‘politics’ hovers in the corner, but is in practice all pervasive. Different responses to the media and different styles of politics are important, but this dimension has been a persistent and important feature – both in raising the profile of the issue (and so resources) and in the concerns about how, without any major outbreak, the issue seems to be going ‘off the radar’ again, with declining media and political interest.
- ◆ There are a number of actors who appear on the periphery of the diagram: not well connected to the core players, nor particularly associated with the core narratives. These include a number of NGO players who, in different ways, have been critical of the mainstream framing of the debates, around livelihoods and development and implications for the poultry industry in the case of GRAIN³¹, and around intellectual property and virus sharing in the case of the Third World Network³². We also have a small circle, but representing a very large group, who have had very little influence on the debate so far at all: small-scale poultry producers, particularly in virus-affected countries in Asia. These, among others, are the marginalised actors who frame the debate in different ways, and offer usually unheard alternative narratives. Section 7 will return to an examination of this group.

An earlier diagram was prepared in the scoping phase of this project (see Scoones and Forster 2007), based on a review of documents and Internet source material available at the time. This helped us identify our starting points for carrying out more detailed interviews. These snowballed out from initial discussions with FAO, WHO and OIE to a range of organisations in Europe and North America. In total we had interviews with 63 people across a range of organisations (see Appendix 2). These have deepened and nuanced our analysis of the politics of policy process, extending our insights and attentions beyond the initial focus. As a very time delimited study, however, we could not cover everything and everybody. Given our focus on the international response, we have focused more on global institutions and their headquarters, rather than in-country experiences. This study is, however,

³¹ GRAIN Briefing. (2006). ‘Fowl Play - The Poultry Industry’s Central Role In The Bird Flu Crisis.’ from www.grain.org/go/birdflu.

³² <http://www.twinside.org.sg/>

being complemented by detailed country studies in Cambodia, Indonesia, Thailand and Vietnam, where we are looking at the international response from the other end of the telescope³³. We have also focused in particular on the main technical agencies at the heart of the response, notably WHO, FAO, OIE, together with UNICEF, UNOCHA and others, as well as the coordinating efforts of UNSIC and others, including the World Bank. While this front-line work is the most visible, there has of course been substantial back-up support from different funding agencies, notably the European Commission, USAID and other bilateral donor governments, many of whom we talked to. However, what follows is necessarily qualified and partial, but hopefully useful, in particular in identifying challenges for the future.

In the next sections, we will first examine the three main 'outbreak narratives' and how these have framed the debate, looking at what was proposed, what happened, and the tensions, dilemmas and trade-offs that have arisen. We will then move on to look at three alternative narratives, which have often been obscured or silenced by the mainstream debate, but which each have important implications for the future. Following this, we move to an analysis of some cross-cutting themes: institutional and organisational architectures, the role of expertise in the context of uncertainty and ignorance; and the (multiple) meanings and interpretations of security and the implications for 'global governance'. Each of these themes – and the analysis of the findings as a whole – has important implications for the future – and in particular what a 'One World, One Health' approach might look like.

4. VETS AND VIRUSES: THE ANIMAL HEALTH RESPONSE

Avian influenza is of course, in the first instance, a bird disease. H5N1 has affected billions of chickens, ducks and other poultry, as well as wild birds. For this reason the animal health sector legitimately argued that this was their territory. They had long dealt with avian influenza and Newcastle disease, a similar viral infection. Thus veterinarians legitimately claimed a place at the table, presenting a strong 'birds first' narrative – arguing that dealing with the disease in its avian form was the best initial step to avoid a human pandemic.

Veterinarians have a long and distinguished professional tradition. This was their moment in the limelight – and the chance, as many saw it, to show that they knew how to stamp out a disease. The veterinary profession is associated with a range of organisations, the apex body being the OIE, an inter-governmental body

³³ See <http://www.steps-centre.org/ourresearch/avianflu.html>

with governments represented through the heads of veterinary services, usually the Chief Veterinary Officer. Avian influenza was a major boon to the veterinary community. As one informant commented:

I see avian flu as a chance to get things done we'd do anyway...We can use the PVS to position ourselves. Because this is a big crisis we can use it to do things that would be difficult otherwise, to get the money. The OIE sees itself as a big player in the avian influenza crisis³⁴.

Similarly, FAO has a long tradition of work in the animal health field, and its Animal Production and Health division is seen as a source of high quality technical advice and field support in this area³⁵. Yet these organisations had been, for a long period, both under-funded and under-recognised. As the avian influenza story hit the headlines, those in charge recognised the opportunity both for funds and influence. One senior FAO informant put it:

This put FAO really in the front line. We started making noise...The technical options are clear. Then there are institutional and policy solutions - we know the elements but how to make them work is difficult³⁶.

The early period from late 2003 to early 2004 saw some awkward manoeuvring between individuals and organisations, and some hot politics. Who was going to get the lion's share of the resources? Who was going to have the most influence? Whose organisation was going to drive the policy debate? These were difficult times, as OIE and FAO in particular fought it out. Inevitably strong personalities, personal histories and professional egos had an influence on the dynamics. But in the end, particularly once the Beijing pledging conference had confirmed substantial resources (even if some of them were loans and many recycled commitments), things settled down. There was enough to go round. A serious fight was not necessary. Indeed, a memorandum of understanding was confirmed between OIE and FAO which demarcated roles and responsibilities in a neat diagram. While the reality was more complex, a working – if occasionally tense – relationship has evolved which has enabled the veterinary community, at least in public, to speak with (more or less) one voice.

Having a clear and coherent position – structured around a strong and convincing narrative – is essential in any policy process. This took some time coming, but has eventually emerged. The veterinary narrative essentially argues that the standard veterinary response – using a combination of culling, movement control and vaccination – to eliminate the disease is all that is required. This is enshrined in the OIE guidelines which specify 'eradication pathways' for different listed diseases. The reporting systems that are required of national veterinary authorities are ones

³⁴ Interview, London, 13 May 2008.

³⁵ <http://www.fao.org/avianflu/en/index.html>

³⁶ Interview, Rome, 30 January 2008.

that ensure early warning and rapid response, and the challenge is more logistical, managerial and financial. For this reason, and with much justification, the OIE argued that the main investments needed are in the area of boosting the lagging capacity of veterinary services in the developing world, bringing them up to an acceptable standard. The PVS (Performance, Vision, Strategy) system developed by the OIE³⁷ is the tool that defines what needs to be done, and the next steps are investment in capacity (labs, personnel training, equipment, vaccines etc.) which FAO, World Bank and other agency projects would take on.

It was clear, it was simple and it allowed money to be spent. In other words it was a perfect response for the moment. With the Director General of OIE astutely manoeuvring the organisation into the mainstream, his influence in the debate grew substantially and, with this, the central role of professional, government vets. But how did this framing of the problem and response limit and constrain, and in some places, undermine the global effort? The construction of a particular view of the disease (one of poultry, mostly chickens) and how to deal with it (eradication/stamping out) reinforced the power and influence of certain individuals and organisations to the exclusion of others. The potential of endemicity, and the very different response requirements for Africa, for example, were often not considered. Similarly, the field level realities that farmers and field vets faced in places like Egypt, Indonesia or Vietnam were not part of the picture. This was a global response, facilitated by global organisations, with a globally-defined pathway of disease eradication. Although a membership organisation with equal voting rights, the OIE does not have a huge network of field offices. It relies on the reports of the CVOs, who are very much beholden to the organisation. The politics of knowledge, reporting and accountability are often fraught, with the centre, and its commissions and advisory groups, holding sway with debates usually dominated by European and North American concerns and interests. Here mass culling and eradication following an outbreak made sense – and indeed were imperative and worked in Turkey. The uniform manuals, protocols and procedures were thus seen to be the answer and so the ‘outbreak narrative’ dominated both diagnosis and prescription.

Another strand of work by animal health specialists, this time mostly from the FAO, focused on dealing with the biosecurity of poultry production units and wet markets. Speculation was rife about the main pathways of spread among poultry – was it ‘backyard flocks’ or large industrial units? Was the disease spread through unregulated and unhygienic trade or through wild birds? No-one seemed to know the answer and any detailed case analysis suggested that multiple routes were possible³⁸. But this uncertainty fed into a more political argument about cause and blame. Here different interests, beyond simple scientific concerns, came into play. Much of this centred on a vision of what a safe, modern poultry sector should look like. For many animal health specialists, particularly those from or trained in

³⁷ http://www.oie.int/download/Prep_conf_Avian_inf/A_Final_PVS.pdfavianflu.html

³⁸ See Sims and Narrod (undated) http://www.fao.org/avianflu/documents/key_ai/key_book_preface.htm

Europe or North America, small scale poultry production and informal wet markets were seen as backward and in need of modernisation. Surely development, they argued, should be about eliminating these practices and assuring high levels of hygiene and safety. Powerpoint presentations show ‘before’ and ‘after’ scenes of Asian markets that had been ‘restructured’ according to the designs of different development programmes. This became the model of what to do and, as we saw in the opening case study, the approach adopted in Hong Kong and beyond.

However, this approach had its downsides, particularly for poor producers and consumers³⁹. Surely, others argued, development is not just about modernisation of production, but also about poverty reduction and improving livelihoods⁴⁰. As played out within FAO, for example, this debate often found veterinarians and socio-economists at loggerheads on appropriate ways forward. In the wider debate lobby groups pushed hard to ‘prove’ that their constituency were not to blame. Wild bird enthusiasts, for example, attempted to demonstrate that it was trade not the migration of wild birds that was at fault⁴¹. Advocates of smallholder farming argued that the blame must lie at the door of industrial capitalist production systems. But were these positions based on evidence or more normative positions and personal preferences? Until recently at least, it seemed mostly the latter. Evidence that wild birds are carriers of H5N1 is widespread, although the causation of particular outbreaks often remains uncertain. Most now agree that unregulated large scale production can be a major biosecurity risk, but many large units equally have top quality biosecurity measures and can deal with outbreaks effectively and efficiently. Backyard flocks tend not to be significant factors in the spread of disease as they are largely kept in limited places and consumed at home, while medium size flocks kept in cramped conditions in urban settings appear to present a particular risk, along with unhygienic wet markets. As new research has found, in addition to the 3Ps (pigs, poultry and people), free grazing ducks in rice cropping areas present a particular challenge in some parts of Asia (Gilbert et al 2007; 2008; Hulse-Post et al 2005; Stum-Ramirez et al 2005).

But these situations are often highly particular, and dependent on a wide range of factors from local ecological ones (such as whether ducks are part of the agro-ecosystem; the migratory routes of wild birds; the proximity to viral ‘hot spots’ and so on) to the structure of the industry (the relative importance of large and small production units and their location), the economics of production (whether poultry production makes money and what incentives exist to squeeze more chickens into smaller spaces) and the regulatory and policy environment (health and safety regulations and their enforceability in markets, movement and trade restrictions and so on). In other words, the idea that there is a single ‘before’ and a single ‘after’ technical or policy solution is impractical, unworkable and possibly dangerous.

³⁹ See, Burgos and Burgos (2007); Beach et al (2007).

⁴⁰ See, McLeod (2008), McLeod et al (2006) or Rushton et al (2005), for example.

⁴¹ http://www.birdlife.org/news/news/2007/03/avian_flu_report.html

The dangers of a simplistic narrative line have come home to roost (to coin a term) in a number of places. There seems to be a certain level of denial about this in some quarters. The need to present a success story of the veterinary response to keep the money flowing can overwhelm the ability to offer honest, balanced, sanguine assessments⁴². Thus in early 2008 a number of senior officials argued that the viral load was decreasing and that this was a direct result of veterinary interventions. But when probed, the evidence for these claims seemed to be lacking. Undoubtedly, successes have been achieved in Turkey and parts of the Balkans, but there are still big problems in Indonesia, Bangladesh, India, Egypt, Nigeria, Vietnam and China (probably the largest global source of the virus), areas referred to by some as “the smoking guns”⁴³. But we cannot be entirely sure about these or many other countries because of poor reporting and monitoring and we must not forget that the reporting is of outbreaks, not of viral load. Even in Vietnam, a poster-child for intensive vaccination campaigns, the problems of repeated recurrence of outbreaks eventually had to be admitted.

So a mixed picture was emerging which challenged, in several important respects, the classic outbreak and response narratives so well presented and defended by the animal health sector. What happens when the disease becomes entrenched or endemic? This is currently probably the case in six countries worldwide – Indonesia, Vietnam, Cambodia, China, Egypt and Nigeria⁴⁴. These are the places where most outbreaks are recorded (see figure 1) and where most human deaths occur. Should a different strategy be in place in these countries? We found it incredibly difficult to get an answer to this question. Some reacted defensively, arguing that good programmes are in place and that eradication remains the aim. Others disputed the definition of endemism and argued that the existing systems just need to be made to work better. Others said it demonstrated the need to do more and build capacity.

A few, mostly with recent field experience in these countries, were, however, more sanguine, saying that they were doing their best, but often simply ‘chasing the virus’. Indonesia was seen as perhaps the most extreme case. As some pointed out, the Participatory Disease Surveillance approach had been enormously successful, finding the virus virtually everywhere. But how did knowing this affect responses? Here the limits of the standard veterinary response became evident. People talked of the difficulties of instituting culling campaigns in Sumatra where deep distrust of the state and the veterinary service persisted. They talked of the way people hid both themselves and their poultry as soon as a government official came anywhere near. They talked of the difficulties that arose when compensation was either not paid or paid late or inadequately following mass culling procedures with vets in white suits and protective gear. And they talked of the futility of poultry bans and market closures in large, unregulated metropolitan cities like Jakarta. One informant reflected:

⁴² Food and Agriculture Organisation (2007a); (2008a); (2008b).

⁴³ Interview, Rome, 30 January 2008.

⁴⁴ Although doubts exist about the extent of entrenchment in Nigeria.

Culling is always contentious. And without an effective compensation strategy you alienate people. In endemic situations does it make sense? The OIE approach is very much ‘first world’ – hordes of white suited professional vets going out, gassing poultry and disposing of them. But is this appropriate or realistic?⁴⁵

Another observed:

A lot of countries remain very underprepared to face avian flu. The immediate response is to reach for the OIE guidelines. And the interpretation of these is problematic. In different contexts, they may not be appropriate. If you are a very poor country with limited logistical and other resources, culling may not be the answer. But very often they go straight for culling and ring culling... Ring culling assumes that AI is transferred through the environment, not through chains. The basic conceptual framework at a technical level is flawed. And the practical, logistical issues are difficult... in Egypt they culled, but did not deal with the disposal and cleaning up well. It just made the situation as bad. The disease persisted. It is money down the drain, and people distrust you too... In the panic of trying to respond – to do something, the idea is lost. We are trying to control a disease! 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... Culling has been done so badly. It has been so heavy-handed. They go into a village and wipe out everything. The average villager is scared shitless of the vets turning up. The last person they will turn to will be the public sector vet⁴⁶.

Another informant noted the mobilisation against veterinary measures in Lagos, Nigeria. When a ban on marketing was proposed by the authorities, women traders marched on the government offices, besieging them. The patron of the traders’ association turned out (apocryphally or not, we are not sure) to be the president’s wife. The ban was, not surprisingly, quickly overturned.

Thus political, cultural, social and economic contexts matter. In Indonesia or Nigeria people have different livelihood concerns, and different perceptions of risk compared both to each other, and certainly to those based in Geneva, Rome or Washington. Even in Indonesia, with 112 confirmed human deaths to date, there are other, greater risks and threats to livelihoods – earthquakes, tsunamis, food prices and more. How does a poultry disease – one that seems ‘just like Newcastle’ – compete with these concerns in people’s risk framings? And, given the often difficult relation with technicians and agents of the state in many parts of the world, why should the public be expected to agree to their recommendations, especially if they arrive unannounced in a village dressed in protective suits and exterminate all their chickens, and so a significant portion of their livelihoods?

These issues – particularly that of compensation and the problems of poor reporting – have certainly been topics of hot debate among the veterinary and public health community. Proper, effective and timely compensation is seen as a key factor in

⁴⁵ Interview, London, 25 January 2008.

⁴⁶ Interview, UK, 11 March 2008.

the response⁴⁷ but in practice conditions on the ground are often unpredictable – and intertwined with more socio-cultural and political factors, such as historical relationships between citizens and the state, perceptions of and trust in expertise, the symbolic and cultural value of poultry, and the particular livelihood contexts of often very poor people. In the neat, technical narrative of the veterinary response, these factors rarely get a look in; and if acknowledged at all are seen as part of the problem: things to be got rid of in the strides towards a modern animal health system.

So what are these points of contention, where a more thorough-going and searching, context-specific debate is required? Below, a few are listed which emerged repeatedly in our interviews:

- ◆ What is to blame backyard birds or commercial flocks – or somewhere in between?
- ◆ What are the implications for ‘restructuring’ and ‘biosecurity’? Can bans work? Who wins, who loses?
- ◆ Wild birds, ducks or trade? Roles in spread and persistence in different agro-ecological and economic settings.
- ◆ Disease dynamics – seasonality, cyclicity – and patterns of re-infection. Is elimination really feasible with large hot spots of ‘viral soup’ nearby?
- ◆ Culling strategies: complete, ring, or not at all? What approaches to compensation? Is this a high cost but low return option in many places?
- ◆ How effective is vaccination (and available vaccines)? Why is there cyclical re-infection despite thorough campaigns?
- ◆ Does the PVS system help design the ideal vet system - for what and for whom?

So, in the course of the past five or more years, a series of important uncertainties have emerged, which add question marks, points of contention and awkward wrinkles to the neat and tidy veterinary outbreak (and stamp out) narrative. While often dismissed as marginal problems, we would argue that together these present some more fundamental challenges. Within the policy community associated with the veterinary response, these debates have started. We probed these and explored the uncertainties with a range of different people. But, inevitably, a recasting of the core framing presents difficult political, institutional and personal challenges for those at the centre of the network. These debates are certainly about science, but more importantly they are about power, money and position.

⁴⁷ http://siteresources.worldbank.org/INTARD/Resources/HPAI_Compensation_Final.pdf

What cuts across these debates is how complex, dynamic field experience in diverse socio-cultural and political contexts matters, and so disturbs the neat formulae (and manuals, protocols and pathways) offered from the international system. Also, and perhaps more challengingly, this experience suggests that in a number of (possibly increasing) places there is a need to move from a framing based on an outbreak and eradication mode – the standard, professional entrenched framing of veterinary science and practice – to a framing which acknowledges persistent, perhaps permanent, endemism – something that seems almost unthinkable for some. These tensions point to some simmering conflicts between different people and organisations within this actor-network, suggesting that the network is not as solid and water-tight as it sometimes appears. Fracture lines exist between the OIE and FAO, and indeed within these organisations, based on understandings of mandates and normative positioning (regulating veterinary standards according to universal global rules versus agriculture for development, livelihoods and poverty reduction, for example), and between head office and field vets and consultants, the latter experienced in the complications of the front line. And at the technical level there are disputes about some real uncertainties, about the structural and ecological drivers of the disease and its spread, and the efficacy and appropriateness of different intervention measures. These came to the surface, perhaps for the first time in public, at the OIE-FAO-WHO June 2007 technical meeting held in Rome⁴⁸. Here, debates raged on the value of culling, particularly in increasingly endemic settings, with some tense stand-offs emerging in different sessions by some accounts.

Many – on both sides of these disputes – reflected on this meeting as one of the high points of the previous few years. At last some of the real issues were being discussed openly; the institutional grandstanding and the squabbling over resources were put aside and the real issues were being debated (at least at the technical level – the lack of detailed socio-cultural and livelihood analysis remained starkly absent). Confronting uncertainties and debating alternatives must be a good thing. But in highly political and often tenuous policy processes it can be dangerous. Actor networks can fracture, tight narratives can unravel, and the political position and resource flows can be threatened. It was clear that this was in some people’s minds by mid 2007, as the 2006 pledged funds either were used up or failed to arrive. The media had lost interest, politicians were beginning to question whether this really was ‘the big one’ that they had to be concerned with, and now the scientists and technicians were questioning things. Was this going to turn out to be a very, very short window of opportunity for the veterinary profession to show its mettle, and get itself funded?

As we discuss in more detail below, by the end of 2007 at the Delhi conference, the actor network had once more closed ranks and put on a public face of unity and coherence. This for some seemed the last chance to rekindle support and interest. And there is nothing better than a new narrative to make this happen – for it was

⁴⁸ Food and Agriculture Organisation (2007d) <http://www.fao.org/docs/eims/upload//232786/ah671e.pdf>

at the Delhi conference that the One World, One Health slogan was launched. Animal health was going to be on a par with the major players in the global scheme of things – human public health and ecosystem health (now often referred to in relation to climate change).

5. PUBLIC HEALTH RESPONSES

The potential major public health consequences of an influenza pandemic were of course the rallying cry that in the end grabbed attention and raised resources. In terms of positioning in the wider actor network, the WHO is very much in the centre. While recognising the importance of the veterinary dimensions, many in the public health community have little knowledge or interest in the animal origins of the disease⁴⁹. It is the public health consequences that are, for them, the major concern.

The Global Influenza Programme in the WHO, established in 1952 and linked to a network of national influenza centres, collaborating centres and reference laboratories, has been central to this effort⁵⁰. On-going influenza monitoring, virus sampling and regular flu shots have been part and parcel of the global public health programming for decades. The model is very much that of global public health system, linking national systems in a global network around public delivery for both prevention and cure. This is the model on which the WHO was built – public funds for public health: the classic global public goods model. As elsewhere in the medical profession a technical, medical, technology driven approach (drugs and vaccines and hospitals) competes with a more prophylactic, preventative, primary care approach, where non-pharmaceutical and community based interventions are seen to be the most effective.

Yet both strands exist within a framework of public support and state structures, very much the post-war modernist vision of development. While this vision has been disturbed and questioned of late, even with the new rhetoric of public private partnerships, of advance purchase agreements with pharma companies, of private medical provision and so on, much of the old statist model still persists. A rapid review of annual reports of the WHO over the years for example sees new languages and perspectives, but a remarkable persistence in vision and commitment to public provision on a global scale.

⁴⁹ However, within WHO a Veterinary Public Health unit existed within the Communicable Disease Department from 1949. A much larger programme was established in the American Region and it still is in place. The Inter-American joint Health and Agriculture Meetings at Ministerial Level (RIMSA) bring together high-level decision-makers from both agriculture and health, and recommendations are brought to the governing bodies of the Pan American Health Organization. See <http://www.panaftosa.org.br/> for more details on this cross-sectoral collaboration.

⁵⁰ <http://www.who.int/csr/disease/influenza/en/> See: Hampson (1997) and Lazzari, S. and K. Stöhr (2004).

Thus, for WHO, the overall narrative is firmly centred in the 'outbreak' mode. A potential major public health emergency is in the offing, it is argued. This could be on a par with 1918, or potentially worse. This requires a global response, with WHO in the lead, and substantial investment in technology (drugs, vaccines) and health systems (delivery, infrastructure). Within this, there are perhaps three overlapping strands identifiable, each associated with different groups within and outside WHO.

First is the technological response. This focuses on drugs and vaccines and their delivery. As an informant from WHO noted, this is a standard response:

Drugs, vaccines, it is inevitably the response. It is the way we operate in health systems. They are more tangible than behavioural responses. It is easier for a system to respond. It is easier to have a stockpile than tell people to wash their hands⁵¹.

Yet the details have caused a massive debate which can only be touched on here. There are multiple views on what is the best strategy, many of them very strongly held. Medical opinion combines with logistical realism with commercial pressure, and it is difficult to pick apart the rationales and influences⁵². The WHO has stockpiled donated anti-viral drugs for rapid containment purposes, while the US has about 70 million treatment courses of anti-virals in federal and state stockpiles⁵³. Elsewhere, no-one seems to know how far this policy has been implemented, as both the costs of getting hold of anti-virals such as oseltamivir and the political challenge of defining who is worth protecting have constraints. And then there are questions of efficacy. Studies in Norway in early 2008 highlighted the possibility that the stockpiled drugs would not work, as oseltamivir resistance to seasonal influenza (H1N1) was detected⁵⁴. Many of the drugs stockpiled in the early period of the crisis are now nearing the end of their shelf life, and big decisions are pending relating to their replacement; a subject on which medical opinion is divided.

Vaccination policy has been especially controversial⁵⁵. While regular, seasonal influenza vaccination has been recommended by the WHO, uptake even in the west has been limited. The challenges of isolating seasonal influenza viral strains, manufacturing the vaccine and making a profit from it have been well documented (Poland and Marcuse, 2004). Around 16 manufacturers globally are currently in relatively advanced stages of producing H5N1 vaccines through a variety of egg and cell based manufacturing techniques⁵⁶. WHO has committed to stockpiling 50 million doses, and the European Commission has recently licensed

⁵¹ Interview, Geneva, 5 March 2008.

⁵² European Vaccine Manufacturers (2005).

⁵³ <http://www.cidrap.umn.edu/cidrap/content/influenza/biz-plan/news/apr2508iom.html>

⁵⁴ Lackenby et al (2008) and see http://www.who.int/csr/disease/influenza/oseltamivir_summary/en/index.html. See also Lipsitch et al (2007); de Jong et al (2005).

⁵⁵ See: Fedson (2003, 2005); Monto (2006); Subbarao and Joseph (2007); Flahault et al (2006).

⁵⁶ http://www.who.int/csr/resources/publications/WHO_HSE_EPR_GIP_2008_1/en/index.html

GlaxoSmithKline's vaccine Prepandrix⁵⁷. Yet global estimates suggest that, given current manufacturing capacity, only 500 million doses would be available 12 months after a pandemic outbreak. There are hopes that the use of vaccine adjuvants to reduce the required dose will increase capacity (Yamada et al 2008). But would this be sufficient in the timeframe and on the scale of a global pandemic? Who would make a pandemic vaccine? Where? Who would have access and who would not? What financing models would work? These are tough questions touching on intellectual property, business models and corporate profits, as well as medical ethical and moral dilemmas. They are such sensitive discussions that they do not often occur in polite conversation. The current realities put into question all the worthy commitments to global health equity, as the reality is clear – only a few, relatively rich people will have access to any vaccine, given the current global distribution of manufacturing capacity, the costs of production and distribution and the lack of cold chain and other facilities in many parts of the world. And even the rich, northern elite will be lucky to get anything if the pandemic spreads quickly with dramatic effects on economies, transport and mortality. In the end it may be only politicians, the military and some health professionals who benefit.

But of course no one knows the details of the future prospects and consequences of a human pandemic, and that's the point. While the debate can often seem very dense and technical with long discussions of genomic sequencing, antibody responses, vaccine adjuvants and so on, most people we talked to, when pushed, said that they had no idea what might work and what might happen. Of course this is not an argument for doing nothing, and indeed the substantial investments in research on vaccines of different sorts (both into types – RNA, killed, attenuated, subunit) and production methods (traditional egg cultures, cell based and so on) may well pay off, as well as the commitments to ensuring a more widely distributed manufacturing capacity is in place. These programmes are absorbing substantial funds, with uncertain pay-offs. For example, the European Commission's high profile research programme on influenza, costed at over EUR 65 million⁵⁸, has most of these resources invested in upstream vaccine research by partnerships of university departments and biotech and pharma companies across Europe⁵⁹. Similarly, support to new manufacturing capacity in the developing world, while backed by private finance, is being supported by public funds. To date, nearly 100 low and middle income countries have told WHO that they want financial support for increasing access to a pandemic vaccine, and in April 2007 WHO approved initial grants of \$2.5m each to six manufacturers from Brazil, India, Indonesia, Mexico, Thailand, and Vietnam⁶⁰.

⁵⁷ The Lancet Infectious Diseases - Vol. 8, Issue 7, July 2008, Page 409. The WHO stock-pile relates to rapid containment only, but has been a recommendation from the Strategic Advisory Group of Experts on Immunization to stockpile 150 million doses for rapid containment and emergency personnel in low and middle income countries.

⁵⁸ European Commission, Influenza Research EU funded projects 2001-7, Luxembourg 2007 (EUR2282)

⁵⁹ http://ec.europa.eu/research/health/influenza/projects_en.html

⁶⁰ <http://www.bmj.com/cgi/content/full/334/7600/925-a?ck=nck>. See the WHO's Global Pandemic Influenza Action Plan to Increase Vaccine Supply (2006) at <http://www.who.int/vaccines-documents/DocsPDF06/863.pdf>.

But all of this is about the future, some of it potentially very long term. At the moment, what is the technological front-line? So-called H5 'pre-pandemic' vaccines are available, but while good as a sales pitch for certain big pharma companies, they only provide some generic immunity to viruses resembling the one that may (or may not) be a pandemic strain. 'Pre-pandemic', as some informants pointed out, is a misnomer – as until the pandemic happens, we don't know what to immunise against, so this is a potentially expensive guessing game. Of course, the 'holy grail', as one scientist put it, is a universal vaccine which provides a combined response to a dozen or more influenza virus types, but this seems a long way off. As with other difficult-to-treat diseases, the influenza virus is incredibly variable, prone to rapid change in properties and difficult to pin down with a vaccination strategy which is not continuously adapting - seasonal virus vaccine strains must be re-assessed each year in each hemisphere. Indeed, many argue that the 'silver bullet' solution is a false promise, providing funds for expensive labs but little else. Such sceptics argue that the only feasible vaccine solution would have to be based on a global commitment to an infrastructure for universal provision of season influenza vaccine, and undertaking that would cost substantial resources and would have to be backed by public money on a massive scale. As several people pointed out, there are nowhere near six billion syringes and needles, let alone vaccine vials, being produced or even stored right now, and no likelihood that this will happen any time in the near future.

In sum the technology fix narrative strand – addressing the outbreak through solely technological means – looks shaky when probed. Yet this contrasts with the up-beat assessments by commercial outfits with pipeline research and development investments and public-philanthropic funding commitments of the Gates Foundation, Wellcome Trust and others. Most technicians and researchers admit the challenges freely, but those in the core policy and business circuits are more reluctant, given the investments and commitments being made. The focus on technology-as-solution is thus backed by big players in a strong, mutually reinforcing network. Cynics point to the 'revolving door' between public agencies such as the WHO, philanthropic organisations and big pharma, and how a particular version of the outbreak narrative feeds into support for commercial interests and particular research efforts⁶¹. But such arguments are countered strongly by pointing out that synergies between public, private and philanthropic efforts are essential given the scale of the challenge, and that the efforts in technology development are for the long-term – and in the scale of things where public money is spent (the most frequently mentioned of course were defence commitments in Iraq or Afghanistan), this is small fry⁶².

⁶¹ There was comment for example when Klaus Stöhr, formerly head of the Global Influenza Programme and a staunch supporter of global vaccine programmes left for Novartis to head up their vaccine R and D (see WHO flu chief leaves for Novartis, <http://www.the-scientist.com/news/display/43504/>).

⁶² The war in Iraq is calculated to cost \$341 million per day; the UK's NHS budget was £90 billion in 2007; in 2008 the UK's MoD announced a contract price of £3.2 billion for two new aircraft carriers.

A second public health narrative focuses on non-pharma options. This emphasises public education and communication, as well as measures such as 'social distancing' in the face of an outbreak to reduce infection and mortality. The assumption is that the technological fixes will not be available or sufficient, so the most efficacious response may be through changing behaviour. A variety of 'knowledge, attitude and practice' surveys were done⁶³, in the standard vein of public health research, and with all the problems associated with them. In addition, a variety of communication messages for public education were developed in different parts of the world⁶⁴. With funds from the Japanese government, UNICEF had led these efforts, with WHO and a number of NGOs involved.

UNICEF's main concern, starting in early 2006, has been changing human behaviour to prevent animal-to-human transmission of H5N1 virus. These programmes are in a familiar mode for UNICEF and other learning and social change health programming, focusing on a few standard health messages (wash hands, cook meat properly, don't let kids work or play with chickens and so on). An informant from UNICEF explained the history:

Following Beijing, it was identified that communications were going to be key for both prevention and control, and an inter-agency meeting was organised in Geneva with WHO, FAO, UNICEF, and others from the regional offices...The result was distilled into the four main points - reporting, cooking, separating, hand-washing. So the messages were identified after consultation with the technical agencies as reasonably simple, attainable and effective and feasible actions very much with the backyard farmers in mind⁶⁵.

Only now is UNICEF moving towards pandemic mitigation, which involves prescriptions and routines for health etiquettes, quarantine, social distancing and so on. In the developed world at least, this approach received a boost in February 2007 when the US Centers for Disease Control and Prevention, together with the Departments of Commerce, Transport, and Health and Human Services, published 'Interim Pre-pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early, Targeted, Layered Use of Non-pharmaceutical Interventions'⁶⁶. This involved plans for closing schools, cancelling public gatherings, organising work leave, tele-working strategies and so on. At the time, it was seen as an acceptance of the limitations of the pharmaceutical response, a realisation that the pandemic would hit months before any vaccine was available, and that the only other prophylaxes – antivirals – were in limited supply, of unproven efficacy, and essentially untested in a pandemic scenario.

⁶³ For example in Egypt (<http://www.comminit.com/en/node/223876>) and Cambodia (<http://www.foodsecurity.gov.kh/docs/ENG/KAP-Surway-Evaluation-Poultry.pdf>).

⁶⁴ <http://www.unicef.org/influenzaresources/>

⁶⁵ Interview, New York, 19 June 2008.

⁶⁶ USA Department Of Health And Human Services (2007).

Hot on the heels of this move came two historical studies funded by the US National Institutes of Health. One found that in the 1918 pandemic, rapid social containment measures had cut peak weekly death rates in some US cities by up to half. In the most extreme case, the peak mortality rate in Philadelphia was eight times that of St. Louis, which had been quicker to implement social control measures (Hatchett et al 2007). The other study (Bootsma and Ferguson 2007) used mathematical models to reproduce the pattern of the 1918 pandemic and found that cities that had relaxed their restrictions after the peak of the pandemic often saw the re-emergence of infection.

Now – in the US at least – the ramifications of twenty-first century style social distancing are beginning to be better understood. There are optimistic aspirations towards communities developing their 'social capital', and of all households being rich and organised enough to hold six weeks food in reserve. But what happens if there is mass panic? The social, political and security consequences remain largely unaddressed. In other parts of the world, such 'social distancing' approaches may not work. As one informant put it "It's all very well having this simple idea of everybody staying at home, but if it's ten in a room, in a home that is no distance from the next, it doesn't really make any sense. We need ideas that are going to work"⁶⁷. Another observed:

It is accepted...that containment will not work. In all countries with humanitarian crises, governance tends to be weak. How can such strategies be implemented? Even in Europe. We are already moving to the next step – response. But what realistically can be done? Some basic capacity issues, yes. Keep the electricity functioning, ensure some basis services. This is important. But vaccines and so on? No. Basically you are on your own. Sit indoors and hope for the best!⁶⁸

But in the professional worlds of vets, medics and agronomists, the advertising buyers, copywriters and vague creative types that make up the communications department don't get much space at the table. One informant commented "UNICEF is not an equal in the interagency debate"⁶⁹. Another observed:

We see it at the international meetings. The whole day can be very animal focused - vaccination, culling and so on - with just an hour maybe at the end to talk about the social aspects - things like closing schools, transport issues. The vets are not keen to accept that the threat of a human pandemic has driven much of the momentum, action and funding. If it was just an animal threat, we would not have seen anything like this response⁷⁰.

It is also the case that the nature of UNICEF's avian influenza funding created its own dynamics. First, it was specifically targeted at East Asia. Second, the distinct and separate nature of UNICEF's initial funding stream (from the government

⁶⁷ Interview, New York, 10 June 2008.

⁶⁸ Interview, Geneva, 5 March 2008.

⁶⁹ Interview, New York, 9 June 2008.

⁷⁰ Interview, New York, 10 June 2008.

of Japan) meant that UNICEF was to some (albeit small) degree made remote from the other agencies. Third, when the Japanese money ran out there was, as someone put it, “a huge sucking sound”⁷¹, and there are now worries all round that a large expectation has been generated that will not be fulfilled, and that the communications component of the response has not been regularised and bedded-in.

Nevertheless, avian influenza communications programmes have raised awareness levels significantly in many places that there is a new deadly chicken disease that can affect humans. Specific, most often domestic behaviours, such as cooking procedures and hand washing, have proved relatively easy to influence, but more detailed knowledge and behaviours about what should be done in the case of more animal-focused activities such as reporting and separation have proved more difficult. And only now, in 2008, are the most obvious social and behavioural aspects of infection and disease spread, such as gender, being investigated (Velasco et al 2008).

No systematic studies, to our knowledge, have really delved into the understandings of people’s risk perceptions and how cultural practices might affect their responses. The practice of drinking duck’s blood, common in parts of Asia, was looked upon by some with revulsion and horror, rather than as something that had to be understood in embedded cultural terms. Similarly, the social, economic and prestige associated with birds in places like Thailand, where prize fighting cocks are very much valued, was not seen as central. Indeed, when people rejected the health messages of different programmes in Sumatra, one informant – a communications professional – talked of the ‘hocus pocus’ witchcraft involved⁷². The people were seen as backward and in need of modernisation, and their fatalism about death and disease something that could be overcome through education and propaganda. That it failed seemed to be a surprise, only acting to reinforce cultural prejudices.

Thus the non-pharma interventions have been, with a few notable exceptions⁷³, largely constructed around a fairly top-down, instrumentalist version of behaviour change, which in the context of a pandemic setting would have to be enforced. Understanding alternative narratives of the disease and its impact have, as in other approaches already discussed, not been a priority.

A third important public health narrative emphasises less the measures to be taken but more the system within which the measures are supposed to be delivered. This is the classic ‘health systems’ approach: it is argued that with a well-functioning system, responsive to local needs and supplying high quality care, and with appropriate technological back-up, any outbreak, whether pandemic influenza or something else, can be dealt with. This is similar to the stance taken by the veterinarians, as we have seen. With decades of underfunding and with many national health systems in a flux of quasi-privatisation, pandemic influenza resources could, it is

⁷¹ Interview, Washington DC, 12 June 2008.

⁷² Interview, Geneva, 5 March 2008.

⁷³ See <http://www.comminit.com/en/avianinfluenza.html>

argued, help rebuild some of these systems which are currently in deep disrepair. This is a classic global public goods response, contributing to proofing the world against a future pandemic (cf. Smith and MacKellar 2007).

And, like the vets, the medical professionals in WHO and beyond know what a good health system should look like: structured, ordered, well resourced, state funded, and run by doctors (something similar to Germany, France, the UK, or Sweden). Information, prediction and early warning is key for this to work well. And a responsive system which allows the right response to happen at the right time, in the right place. For this reason, and as discussed further in section 5, substantial investment in information systems and surveillance is seen as critical.

Of course most of the world is not like western Europe and the ideal health system probably doesn’t exist anywhere. Whether it is a desirable or achievable goal is also widely questioned, given the realities on the ground, where hybrid public-private-traditional systems exist in highly unregulated and poorly resourced settings, and where, increasingly, services can be purchased in pharmacists and on the Internet (Bloom et al 2007).

Again, as with the veterinary response, when probed, no-one quite knows what will work where and when – and for whom. The basic models are based on North American or European responses, with different emphases on technological, non-pharma and health system responses, yet reality often acts to undermine and challenge these idealised narratives in practice. There are some big interests at play here – and it is not surprising that large pharmaceutical and biotechnology companies are pushing technological solutions, hoping for public funding to offset their commercial risks.

For the WHO, and others making the case for global public health, the avian influenza crisis came at a good time. The wider public health narrative served institutional purposes well. As a UN agency whose core resources had declined over time, and whose primacy of position had been overtaken by other initiatives such as the Global Fund or UNAIDS, building on the long-term influenza programme and undoubted experience and expertise offered an opportunity to present WHO as the core organisation able to respond to the potential crisis. The then Director General, Lee Jong-Wook, made the case and galvanised early support from the UN system, and from the Secretary General in particular. The International Health Regulations, seen as a revalorisation of the WHO with new powers to operate at a global level, were approved with the avian flu crisis providing an important spur to action. Funds to the WHO started to flow and information and virus tracking systems, as well as laboratory and vaccine facilities, were planned and built. Lee however died suddenly in May 2006, and a successor had to be found. Margaret Chan was appointed, whose experience of successfully dealing with the SARS outbreak in Hong Kong was seen as a key factor in her appointment. She quickly saw the importance of the avian influenza issue, and, drawing on her experience, backed the WHO avian influenza initiatives.

However, as discussed at greater length in section 8, the international coordination of the avian flu response changed over time, particularly within the UN system. When David Nabarro – a British medical doctor who had previously worked at WHO, and before that at DFID – was appointed by the Secretary General to head UNSIC, the centre of gravity shifted from Geneva to New York. There was also pressure to make the response more coordinated and coherent, with technical agencies across the UN (notably WHO, FAO, UNICEF, but also WFP, UNOCHA and others) and outside (notably OIE and the World Bank, but also others) speaking off one sheet. As discussed in section 8, this was no easy task. And to this day, there are those in WHO who resent this move towards cross-agency coordination. This surely was a WHO mandate, they argue, and why was the Secretary General and UNDG, and increasingly the World Bank, none of them health specialists, meddling in this when the obvious technical capacity sits within the mandated UN agency?

This resentment has persisted and coloured some initiatives and efforts. The DG, Margaret Chan, however has regularly risen above these usually local wrangles of territory and resources, and committed the WHO publicly to the more joined up cause, often emphasising the non-health aspects of avian influenza in speeches, not always to the delight of her colleagues. This changing and sometimes ambivalent positioning of the WHO in the policy process is central to understanding both the process and its outcomes.

The vision of the WHO, with new International Health Regulations under its belt, as the guarantor of global health security is a strong one, articulated forcefully in both numerous publications and many of the interviews we conducted. The security discourse is important, as discussed in section 9. The language is often telling. This highlights the role of cross-border intervention, with medics being the army fighting the war against the disease with the weapons of vaccines and drugs. But often this is wrapped up in a higher, more worthy, moral language of 'responsibility' and 'rights', equally important dimensions of the WHO vision. Unlike perhaps the veterinary world, where issues of capability, rights and access don't get a look in, these are very much part of the discourse in the public health world. Yet in both the military and the access/rights-focused metaphors and linguistic turns, a rather benevolent, top-down, we-know-best version comes across. As several informants put it "you have to remember this place (referring to the WHO) is full of doctors".

But there is also humility amongst the bravado. In particular, a number of more senior figures commented on the failures of the public health community globally to respond to the HIV/AIDS pandemic effectively. This is a scar on the conscience of some, and something that, as committed professionals, they do not want to repeat. Yet, at the same time, a familiar refrain is that they do not want to repeat the UNAIDS solution. The UNAIDS building, with its fine public sculptures and modern architecture sits opposite the WHO building. It is regarded by those in the WHO with a mixture of disdain and envy. Envy for the profile and resources, but disdain for the waste, lack of technical skills and, in some people's assessment, a poor record of achievement. Those involved in the avian influenza response are proud that they

have developed a leaner, more efficient and technically informed response, which does not need a fancy new building, but can build on the in-house capacities and experiences of the WHO in particular.

However, there is concern evident in the corridors of the WHO and other agencies working on the public health side. The longer the pandemic doesn't happen, the more questions are raised about avian influenza as a human, public health priority. Surely there are other more pressing problems – what about the big killers like malaria or diarrhoeal diseases? Is this the best way to spend money, some ask? This is a real dilemma, and one that again raises the spectre of shameful negligence on the scale of HIV/AIDS which no-one wants to repeat.

As things stand, a wide range of uncertainties persist – from the big unknown (will a pandemic happen at all, and if so when?) to the specific unknowns (about vaccination and drug efficacy, about behaviour change in situations of crisis and so on). Again, rather echoing the on-going debates about other responses to epidemics such as HIV/AIDS, debates rage on whether a treatment focused approach (drugs/vaccines) makes sense, or whether preventative approaches (behaviour change) have the best results, or whether both have a role. Should the response be led by the state, or can private providers and community action offer better and cheaper solutions? Or can some form of partnership be developed that transcends these boundaries?

As we have seen, different narratives about cause and effect, problem and solution compete in the public health field, but all respond to a characteristic 'outbreak narrative' and are confined to a fairly technical, formulaic response, with uncertainties of all sorts pervading. But the big question remains: is this enough? Are the combined measures of vaccine and drug development and stockpiling, behaviour change and public education and health system improvement really increasing the world's resilience to uncertain future zoonotic threats? Who is left out – and where? What alternative narratives are obscured by the dominant framing, and what structural inequalities are sustained or provoked by the political interests that prevail? These are questions that are picked up in section 10. First, however, we take a look at a third major narrative surrounding avian flu: pandemic preparedness and emergency response.

6. PANDEMIC PREPAREDNESS

Another strand of activity, again firmly centred on an 'outbreak narrative', focuses on pandemic preparedness. This is much larger than the public health response, and links to wider issues of economic risk management, business continuity planning, civil contingency and emergency response. In this narrative, the worst needs to be prepared for...and it could be very bad. With food supplies restricted, energy systems disrupted and the Internet down, widespread panic and fear could grip any population faced with overloaded hospitals, sick or absent medical staff, numerous corpses, and military-style containment measures. Of course no-one knows the likelihood of any of this happening, and many regard it as highly unlikely given the way the H5N1 strain has been evolving⁷⁴. Nevertheless pandemic influenza is high on the risk registers of national security agencies, and prime ministers and presidents don't want to mess up. As one informant described:

This global pandemic response element is being driven by the US, Japan, Europe, Australia of course, but it is a genuine developmental problem – it will be the developing world that will be most hit. We all have to have pandemic preparedness... the first line of defence is seen to be the developing world⁷⁵.

The US in particular has taken this side of things very seriously. To date it has been untouched by the avian disease, and SARS only got as far as Canada. Yet preparing for a pandemic has been highlighted as a major priority by the Bush administration over the last few years, and substantial resources have been spent across government and business. Local government and city authorities, Wall Street and the corporate world, and the military, have all undertaken big simulations, and made significant investments. Significant too is a different culture of threat, fear and anxiety in the US, where safety and security are seen as a paramount, especially since the attack on the twin towers in September 2001. As one informant explained:

What drove it from the White House was the national strategy. That document is our best shot at identifying the totality of what a pandemic would bring. By having our Department of Homeland Security focussed on the critical issues – by getting the department of aviation to work with the airline industry for example – it really is looking at the totality of it, going far beyond the human outbreak, far beyond the animal outbreak, but at the same time we have to realise its limitations⁷⁶.

The UN system has taken the pandemic threat seriously too. In 2005, the Secretary General, then Kofi Annan, called a high level meeting and urged a cross agency response, with a central coordinating unit based in the UN Development Group at

⁷⁴ Horimoto et al (2004).

⁷⁵ Interview, London, 25 January 2008.

⁷⁶ Interview, Washington DC, 11 June 2008.

UNDP. The first concern was internal: how was the UN going to respond? What was going to be required of the UN system in the event of a major outbreak? How was the UN going to 'survive to serve' – to keep its own people alive and healthy in order to help others around the world? This was, for some, thinking the unthinkable. Many in the agencies dismissed this as alarmism: they were busy people, they had their own projects to get on with. But others in senior administrative positions have increasingly taken the pandemic preparedness agenda on board.

Consequently agencies across the UN have prepared plans, and a subset has undertaken simulation exercises to test these plans. A number of cross-UN exercises have been undertaken to test out what might happen under different circumstances. UNOCHA, the UN Office for the Coordination of Humanitarian Affairs, and its specialised Pandemic Influenza Contingency (PIC) team, has taken the lead within the UN system, supported by the World Food Programme and others. They have developed a number of training modules and have worked intensively with UN country teams across the world⁷⁷. They have a 'UN system pandemic preparedness map' and indicators to show the level of preparedness around the world, showing the vast majority of the world to be 'less or medium prepared'⁷⁸.

Many involved in this effort are brutally honest about the level of preparedness. The world is definitely not, they say. It might be more so now than before, but if a pandemic emerges quickly, is identified late and spreads fast with characteristics that result in high mortalities, the plans and preparations may not be worth much:

Our assumption is that systems will fail. No early warning, or a cull of chickens... We simulate two weeks of confusion. We try to be realistic. Total a six week period. At the end of the first week – identification of a novel virus. Containment is on-going. Week two - containment fails. Week three - three countries are swamped. Week four – it's a global pandemic.⁷⁹

Another informant commented:

Given the complexities of the pandemic, given the resources that would be required to deal with the severe one, we will never prepare.⁸⁰

Yet everyone also stresses forcefully, this should not mean we just adopt a fatalistic complacency and do nothing. For this reason, they argue, investing in pandemic preparedness planning and developing contingency arrangements and emergency systems are essential. These are useful anyway, as they could be used for other disaster situations, whether an earthquake, flood or terror attack. Certain principles

⁷⁷ <http://ocha.unog.ch/drptoolkit/PSimulations.html>

⁷⁸ <http://www.un-pic.org/pic/web/index.aspx>

⁷⁹ Interview, Geneva, 6 March 2008.

⁸⁰ Interview, Washington DC, 11 June 2008.

apply: clear information systems, short chains of command, centralised decision making, clear areas of responsibility, stockpiled resources which can be mobilised at speed and a rehearsed pattern of action which can be unrolled quickly.

In practice, of course, the experience has been mixed⁸¹. According to the UNSIC/ World Bank Progress Report (2007), 120 pandemic preparedness plans have been developed around the world. Most of these have been drafted by cross-ministry groups, often under a senior official with political clout – if not the president or prime minister at least their deputies. This is seen as an important success: there is political buy-in, cross-government coordination and an agreed plan. But a little probing suggests that this may be more form than substance. Most plans are long, turgid documents, developed from templates elsewhere. ‘Useless’, ‘not worth the paper they are written on’, ‘creating a false sense of security’ were some of the comments we heard – including from those who helped prepare them. And, although they may exist on paper, most have not been tested at all. Thus all sorts of grand plans exist, but there is a certainty that they won’t happen in practice. “How can you expect hundreds of trucks to be mobilised to transport food to containment areas when there are no stockpiles of either food or fuel?” someone asked⁸². A few countries have carried out detailed simulations of their plans under a range of circumstances, including the UK⁸³, but even in these contexts (rich, well resourced), there is some doubt about the plans’ likely effectiveness. Getting engagement with planning for the unknown is difficult, even within the UN system. As one informant put it “it’s so hard to get people to focus on an emerging pandemic. They say ‘Leave me alone...I have a programme to run’”⁸⁴.

So, despite the doubts and concerns, the pandemic preparedness narrative continues to take up a lot of time and effort - and a large chunk of the global resources. With avian influenza framed as a ‘crisis’ or an ‘emergency’, far more resources were mobilised than if it was cast as a development problem of poor people’s poultry. The crisis and emergency framing has its advantages – there is urgency, money flows and political commitment at the highest level is there. But it has its downsides: the money is fickle, short-term and tied to rapid response and timeframes; it can create distorting incentives and lack of strategic thinking; people are employed on short-term contracts with short-term money; and, because it is under the detailed scrutiny of the political masters, it can be used in ways that technically may not make sense to meet short-term political objectives.

The world of crises and emergencies is thus very different to the highly technical, often quite academic, cultures of the veterinary and public health responses discussed above. Across the avian influenza response the mix and interactions have not always been easy, resulting in frustration, competition and confusion at

⁸¹ See Fauci (2006); Coker and Mounier-Jack (2006); Mounier-Jack and Coker (2006); Webby and Webster (2003).

⁸² Discussion, Geneva, 6 March 2008.

⁸³ <http://www.ukresilience.gov.uk/pandemicflu/exercises.aspx>

⁸⁴ Interview, Geneva, 7 March 2008.

times. Within the UN, for example, the humanitarian and emergency arm think in very different ways. They draw from military planning, logistics management and operations thinking, not technical understandings of epidemiology, ecology or economics. They focus on action and results, quickly and efficiently, rather than long-term solutions to complex development challenges. The language is of ‘emergency campaigns’ and ‘surge responses’. It has quite a gung-ho, muscular feel to it, which sometimes does not go down well in other settings. A number of fairly standard disaster and emergency systems have been adopted and adapted for the avian influenza response. From the US forest service, the ‘all-hazards approach’ has been pushed by USDA and USAID in their programming around the world⁸⁵. The investment in surveillance, information and emergency response systems has been substantial, with emergency operations rooms installed in both FAO and WHO to help coordinate response to outbreaks.

In the WHO a former underground cinema room has been converted into a state-of-the-art emergency room⁸⁶ – the SHOC room. Around a large table a set of screens provide up to the minute information on the unfolding of different outbreaks and the responses being made. Banks of computers sit behind the room, with intercom and video link systems allowing connections with key experts in different parts of the globe. On the day we visited avian influenza outbreaks featured prominently, alongside cholera, Rift Valley fever and Yellow fever. It is an impressive set-up. At the FAO another room, the Crisis Management Centre (CMC)⁸⁷, furnished in bright orange and known informally as the Guantanamo room, offers the same service and links to the WHO centre through daily tele/video conferences.

But how effective will this impressive infrastructure be if a pandemic really occurs? It is clear that the neat Phase 1 to 6 pattern of a slow and paced evolution of a pandemic may not occur as the manuals suggest⁸⁸. The WHO pandemic

⁸⁵ <http://www.fs.fed.us/global/aboutus/dmp/welcome.htm>

⁸⁶ The J.W. Lee Strategic Health Operations Centre, <http://www.who.int/bulletin/volumes/84/10/06-011006/en/>

⁸⁷ <http://www.fao.org/askfao/viewquestiondetails.do?questionId=51613>

⁸⁸ See: <http://www.who.int/csr/disease/influenza/pandemic/en/>. The six phases identified by WHO move from an inter-pandemic period (Phase 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low; Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease) to a pandemic alert period (Phase 3: Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact (“person-to-person”). Phase 4: Small cluster(s) with limited human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans. Phase 5: Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly better adapted to humans, but may not yet be fully transmissible (substantial pandemic risk)) to a pandemic period (Phase 6: Pandemic: increased and sustained transmission in general population). (see http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf for the Global Pandemic Preparedness Plan, WHO, 2005).

preparedness documents show how early detection results in rapid containment and a slowing of the pandemic in Phases 3 and 4, allowing time to get ready for the major consequences of the outbreak in the full global pandemic phase. These carefully produced booklets and presentations are, however, open to some questioning – and not a little derision. As many point out, we may not see a Phase 3 or 4 at all, as a real pandemic strain will spread in days to every major city in the world. And by Phase 5 or 6, countries will “be on their own”. Ideas of containment are accepted as wishful thinking by many, with some finding echoes of Cold War thinking. Without extreme and highly disciplined military force, restricting a population to a small area would be impossible. Few governments would be able to enforce such a strategy, even if it made sense from the epidemiological point of view. When asked what he would do if a pandemic occurred, a senior official at the WHO answered succinctly: “head for the hills”. It was not a joke.

So, deep uncertainties remain – about information accuracy, prediction possibilities and response strategies – and no-one knows quite what will happen when. Will we be faced with a damp squib ‘slow-burn’ epidemic, or a global catastrophe? Or will nothing happen in our lifetimes?

An important question we return to below is whether this collective global response has resulted in a safer world, more resilient to future disease episodes – either in pandemic outbreak mode or not. We asked this question to a number of people involved in the international response to avian influenza and there were two views – yes...and no. These reflect institutional positions, technical knowledge and personal outlooks, but, more fundamentally, we suggest they reflect an important contrast in perspective between those who see a risk management approach as increasing safety and resilience, and those who argue that recognising uncertainty and ignorance as central requires a different approach – and indeed that conventional approaches to risk management may even make things riskier.

We will return to this debate in section 10. In the meantime, we want to turn to some alternative narratives that have been obscured by the dominant outbreak narratives discussed in the previous sections. For it is these – often discussed on the margins by those outside the main circuits of power and influence – that may offer insights into what has been missed in the mainstream response, and pose challenges to the way things have been done to date.

7. MISSING DEBATES, ALTERNATIVE NARRATIVES

Looking across the three main outbreak narratives discussed so far, we have to ask what is missing, obscured, hidden or blocked? Is there a set of alternative narrative framings that emerge from the margins as critiques of the mainstream? Rosenberg (1992) has argued that epidemics can be explained in at least three radically different ways – contamination (focused on disease transmission), configuration (focused on disease context) and disposition (related to the individual carrier of the disease). Each is important, and each has had different influences on our understandings of, and responses to, public health over time, he argues. Yet, the contamination strand, and its emphasis on disease outbreaks, laboratory diagnosis and a treatment response has dominated at least since the mid-twentieth century. As we have seen, this has certainly been true in the case of the avian influenza example, but what about other explanations of epidemics? Arguments centred on disposition have been important – the ‘super-spreaders’ of recent epidemiological models have often focused on particular individuals. Outbreak narratives often involve an important individual – from Mary Mallon (Typhoid Mary) in 1907 in the USA to the doctor who carried SARS to Hong Kong’s Metropole Hotel in 2003 – and, although no single individual or group has been identified as a ‘super-spreader’ in the epidemiological sense in the unfolding drama of avian influenza, certain groups have been pinpointed as being more significant in the spread – and blamed for it. Thus, backyard chicken farmers and wet market traders in Asia – and the Chinese perhaps in particular – have been fingered. The focus on ‘risk groups’ and particular agents of spread may remove emphasis from the wider context, the epidemic’s ‘configuration’ in Rosenberg’s terms.

In the welter of activity, funds, people and acronyms that the mainstream ‘outbreak’ and ‘contamination’ approaches have generated, it is easy to ignore alternative framings. Some of these are presented, not as alternatives or challenges to the mainstream views, but as complements, additions and nuances. Often they are articulated together with the mainstream narratives, but more as a polite add-on, a superficial dressing, or an acknowledgement of alternative views, before proceeding with the main argument. These different framings are not always presented by radical opponents of the mainstream. Many of the most articulate advocates of these views work within or for the core organisations at the centre of the actor-network. Thus the relationship between these narratives and what has been discussed before is complex.

We suggest, however, that they each, in different ways, offer insights that are not fully dealt with in the mainstream outbreak narratives, and present interesting challenges to the way an international response to avian influenza – or indeed other zoonotic diseases under the ‘One World, One Health’ banner – needs to be thought about. This section, therefore, addresses three alternative narratives. The first focuses on the causes of the disease and its dynamics; the second focuses on

the way normative concerns about poverty, livelihoods and equity are treated; and the third focuses on questions of access and global governance. In different ways, each suggests challenges for the One World, One Health agenda which are not immediately obvious in the mainstream approaches discussed so far.

DYNAMIC DRIVERS AND UNDERLYING CAUSES OF NEW DISEASES

The outbreak narrative and associated emergency/crisis response tend to focus on the outbreak event, not the underlying causes. Information systems are based on reporting outbreaks, not changing epidemiological dynamics, for instance. And responses tend to hone in on the diseased organism with treatment measures, or the diseased area with disease control/eradication measures. This applies to both the human and veterinary response framings. This is replicated in the emergency response which focuses on mitigating the worst impacts of an outbreak, both ‘at source’ and after it has spread.

At least in the way that the narratives are framed, these are fairly standardised, universal responses which are ‘rolled out’ across the world according to plans, programmes, strategies backed up by protocols, manuals and regulations, and overseen by a technically-equipped and well resourced, benevolent ‘international system’. This universal, global vision is very much part of the contemporary rhetoric – and indeed frames the One World, One Health slogan. We are all in it together; we know how to deal with it; it requires coordination and coherence.

Scientific interventions – and models of different sorts in particular – act to reinforce this framing. So computer models of disease spread for example show clearly how localised, at source eradication or containment efforts are critical in preventing a global pandemic. This justifies cross-border intervention, under the concept of ‘responsibility to protect’ to use the current jargon⁸⁹. But of course models are just models and dependent on often quite heroic assumptions – like diseases spreading in concentric circles, that borders of countries and districts don’t matter, that people are prevented from moving and so on. Surreptitiously and insidiously these ideas have an impact on policy framing, such is the power (and simplicity) of modelling. The 2005 models published simultaneously in *Nature* and *Science* (Ferguson et al 2005; Longini et al 2005) probably had such influence. While all well qualified and perfectly rigorous in their own right, somehow their implications were extrapolated, framing policy in a particular way. Here was the outbreak narrative in its purest form, with an outbreak response lined up, all justified by science⁹⁰.

⁸⁹ See <http://www.responsibilitytoprotect.org/>

⁹⁰ The influence of models with some heroic assumptions embedded in them on disease policy debates is of course not new; see, for example, the UK foot-and-mouth policy debate in 2001 (Campbell and Lee 2003; Kitching 2004).

But – and no-one denies this – it is not so simple. Complex disease dynamics mean that we don’t know what is going to happen when, and when outbreaks do occur, their pattern and impact is highly context specific. Such complexity is not amenable to simple outbreak models, and requires a deeper understanding of changing ecologies, demographics and socio-economic contexts – and, in particular, their interactions and dynamics in particular places. This field level understanding of dynamic contexts is startlingly absent in much of the work on avian influenza. Yet quite a lot seems to be known, even if it appears rather anecdotally in research papers and conversations. The vivid descriptions of the ‘viral soup’ in Qinghai Lake in western China, the migratory birds that carry the virus, and the increase in human-livestock interactions in rapidly growing urban centres, are startling. As one ecologist put it: “There is a whirlpool of genes re-assorting...It’s a dream for reshuffling of viruses. The lake is a soup of viruses”. But beyond some surveys, reproduced as multi-coloured GIS maps (a favourite form of presentation in this field – with red always being danger) (Pfeiffer et al 2007a, b; Jones et al 2008), and some recent work on duck-rice systems (Gilbert et al 2008), there has been remarkably little detailed socio-ecological investigation of the dynamics of change.

Given the potential threat and the resources being invested elsewhere in other activities, this seems remarkable. It of course relates to the politics of the policy process, and the individuals, organisations and professional interests that have captured the agenda. One informant commented:

As an epidemiologist, I keep looking for that pump handle solution. You know, what is that thing which is causing, mostly women, who are mostly the ones who raise chickens, to become infected, and then go on to negative outcomes, to die? What about the slaughter process? What about the habit of picking the sickest bird in the group for the pot? And not being able to seek medical advice. The control might not actually be with birds, but at the human-animal interface that says how can I safely handle an infected bird? That may be an area that has gone under-investigated. Maybe we need to hit exactly where the ministries of health and agriculture meet⁹¹.

If the real risks exist “exactly where ministries of health and agriculture meet”, it may be that the response, focused as it is on separate narratives of human and animal health may miss the “pump handle”. And, surely, understanding the underlying drivers of disease change – and the socio-ecological dynamics of emergence – must be part of any international response. We assume that zoonotic disease ‘hot spots’ exist where natural reservoirs of disease from wild fauna are found close to usually rapidly growing urban conditions with intensive human-animal contact, usually in settings where regulation and human health/veterinary services are weak or non-existent. Southern China is an example – as is Indonesia, Vietnam and much of south and south-east Asia, as well as urbanising Africa. The risks may be further enhanced with certain practices – consuming bush meat, living with livestock, shopping in wet markets and so on – and certain conditions

⁹¹ Interview, Washington DC, 13 June 2008.

– notably poverty, malnutrition and immune system suppression (such as through HIV infection). In other words, these so-called ‘hot spots’ are not isolated places far from anywhere as the term might imply, but most of the developing world, and encompassing where most of humanity lives. As one informant explained:

With avian influenza there is a slow realisation that it is no longer an emergency. It is a deep rooted issue underlying the disease. But this is very slow; and is resisted. It is more attractive to be doing something in emergency mode rather than investing in strategic thinking...Avian influenza to my mind is more a symptom of massive changes in the poultry sector globally. ...there have been massive increases in poultry and duck production. An avian influenza was bound to arise. The question is how to improve the management of these sectors. Not just about the disease. Overall, we should be aiming for a framework for other viruses. If this one is not it, some other will be. But we are not there yet. Far from it.⁹²

An outbreak narrative is an appropriate framing for those who do not live in these places and who want, for perfectly legitimate reasons, to protect themselves from any disease. But it is perhaps less so when seen from another perspective. In many settings in the developing world, people are used to living with infectious disease. They have deeply embedded ‘cultural logics’ (cf. Hewlett and Hewlett 2007) that influence the way they understand and respond to diseases – of both animals and humans, and thus their constructions of risk. These may be at odds with standard medical and veterinary framings, resulting in disconnects between official programmes and local response. We found no sociologist, anthropologist or political scientist, for example, working on the avian influenza programmes of the major agencies. Yet there was a recognition that such perspectives were important in some quarters. In reflecting on the partial success of communications efforts, one informant commented:

This is where the anthropological, the cultural and the social come in. This means long term engagement rather than just communicating about the risk. These are the more complex and nuanced issues.

Such a perspective, focused on the dynamics of disease and local responses, casts the agenda wider than the standard outbreak-treatment-eradication mode. Whole ecosystems and their complex interactions must be examined, and the social-cultural-livelihood interactions must be at the centre of both diagnosis and response. Given the way the current response has been framed, structured and financed, this may prove difficult. But such a perspective may have important ramifications for a One World, One Health perspective – in terms of disciplinary and professional skills, organisational arrangements, and identifying the focus for funding. This is discussed further below.

⁹² Interview, UK, 11 March 2008.

⁹³ Interview, New York, 9 June 2008.

POVERTY, LIVELIHOODS AND EQUITY

A related narrative emphasises the distributional impact of disease burdens, rather than the disease per se. It points in particular to the impacts of diseases on different people, and also the impact of interventions. For, as we have already noted, avian influenza mostly affects poultry keepers in the developing world, many of whom are poor. The responses geared at a ‘global public good response’ – which are often designed to protect richer countries – have a disproportionate negative effect on poor livestock keepers. This inequality is at the heart of some of the major tensions over the international response. For those framing the problem as an emergency – and focusing on pandemic threat to humans – mass culling of chickens is seen as a necessary evil, which if compensated for, offers a substantial public good benefit. But looked at from the perspective of those whose livelihoods at least in part depend on these poultry, such an intervention can be catastrophic. Clearly the impacts will depend on where it happens and the alternative sources of income which might be available. Banning backyard birds in Thailand, say, has less of an impact, and causes less of an uproar than it does in Vietnam or Cambodia where economic and livelihood contexts are different.

There has been a range of excellent studies on the potential poverty impacts of avian influenza (both the disease and its control) by researchers linked to the FAO (Rushton et al 2005; Epprecht et al 2007; Roland-Holst et al 2008), as well as sustained commitment by the European Commission, the UK Department for International Development, among others to work in this area⁹⁴. Studies document the distribution of poultry, the structure of the industry, the importance of poultry to livelihoods and the impacts of culling, market bans and so on. Findings all point to the importance of considering distributional impacts and equity in any assessment. This argument is picked up most forcefully by NGO campaign group, GRAIN, which makes the case that a ‘restructuring’ of the industry towards biosecure, large-scale units favours the large scale corporate interests which increasingly dominate the poultry industry globally. This has knock-on consequences for people’s livelihoods, food safety and animal welfare. This political economy of the food and farming industry, where politics and corporate interests define the shape of policy, is an area which, again, is obscured by the technical disease focus of the medicalised outbreak narratives.

As Farmer (1996, 2001 and with Sen 2003) points out, structural inequalities define health policy and intervention and, as others point out, have done since the colonial era, when medical intervention and colonial conquest were very much part of the same project (cf. McLeod and Lewis 1988; Vaughan 1991; Arnold 1993; Anderson, 1996). An attention to the wider political economy of the international response to disease is therefore critical, and one that brings up sharp dilemmas and uncomfortable truths for narrower technical framings.

⁹⁴ See, for example: http://ec.europa.eu/world/avian_influenza/index.htm and <http://www.hpai-research.net/index.html>

Again, the debate about poverty and equity – and the wider political economy questions associated – highlights the division between those with essentially a disease-focused framing of the problem and solution, and those who adopt a broader, normative development perspective. With a normative position central, we must ask: whose world, whose health, and which public, which good? It is not ‘just’ about controlling a disease, but asking where, for whom and with what distributional consequences. Gender dimensions, for example, are central, and important work supported by the European Commission highlights this (Velasco et al 2008)⁹⁵. There are many within the actor-networks at the core of the international response who of course see these questions as central, and particularly country-level projects and programmes are focused on just these developmental challenges. But sometimes this has been lost in the technical disease-focused response of the trio of global outbreak narratives. Given the mandates of the FAO – development through agriculture – or the WHO – improving human health – this is surprising, but witness to the strength and influence of certain framing assumptions and associated interests linked to the mainstream perspectives. However, as discussed further in section 11, if the One World, One Health banner is not just to be a glib slogan, representing an empty commitment to globalism devoid of politics, then these normative, political issues will have to be brought back in, requiring in turn, we suggest, a recasting of the outbreak narrative in some quite fundamental ways.

ACCESS AND GLOBAL GOVERNANCE

One of the assumptions of the three international response narratives described earlier (veterinary, public health and pandemic preparedness) is that everyone plays ball; that there is a global consensus on what to do and that this can then be implemented through an international architecture, based on the principles of cooperation and respect. This is essential to allow early detection, rapid response, viral change monitoring, timely manufacturing of vaccines and so on. A well-oiled, rules-based international machinery, with the UN technical agencies at the centre, is needed, it was argued by some of our informants. As a number commented, the overall level of collaboration and integration surrounding the avian influenza response has been remarkable when contrasted with dismal past experiences of cross-UN and development agency working. For some, the avian influenza experience offers a shining example of the potential of effective global governance, and the effectiveness of the International Health Regulations (Fidler 2005a; Fidler and Gostin 2006; Lee and Fidler 2007).

But it only requires one spanner in the works and things get difficult for this idealised system. In this case the spanner came from Indonesia, at the very epicentre of the outbreak, and a strident minister of health, Siti Fadilah Supari. Her book, ‘It’s Time For The World To Change in the Spirit of Dignity, Equity and Transparency – Divine Hand Behind Avian Influenza’, together with a campaign facilitated by the Malaysia-

⁹⁵ See: http://ec.europa.eu/world/avian_influenza/docs/gender_study_0608_en.pdf

based campaign NGO, Third World Network, outlined the argument that sovereign rights should not automatically be ceded to the international system, and the WHO in particular⁹⁶. Viruses from Indonesia should belong to Indonesia (even if they originally came from China), and that any benefits derived from using these – for manufacturing vaccines or drugs in particular – should result in benefit-sharing to the country of origin. The model was the recently negotiated International Treaty for Plant Genetic Resources, which was seen as a major victory by campaign NGOs and southern governments whose arguments about corporate bio-piracy had animated the debate⁹⁷.

In the context of the avian influenza response, a focus on access rights, national sovereignty and benefit-sharing rather took the WHO by surprise. Surely, the Indonesian government would want WHO reference labs to sequence the viral samples? Surely sharing of the virus and associated information would be to everyone’s benefit, even if a private company came up with a vaccine? Surely this is very different from seeds and crops? It soon became clear that this rather naïve response was inadequate. From beyond its walls the WHO was not necessarily seen as the benevolent protector of humanity’s health. Some saw the WHO as part of the problem – too under the control of northern commercial and political interests; in the pocket of big pharma and the US. Conspiracy theory or not, such a view can easily take hold.

There has perhaps been a lack of recognition in the WHO and other parts of the UN system of changes in economic world order and the geopolitical consequences. Indonesia sees itself as an emerging regional power – a moderate muslim country which needs to be taken seriously. Rumour has it that Venezuela, Cuba and Iran were ‘whispering in Indonesia’s ear’ and encouraging its stance⁹⁸, as it has been advocating the independent manufacture of generic anti-viral drugs and confronting the patents issues (Fidler 2005b). India argued that it could deal with its own avian influenza outbreak, and did not need external experts providing advice when their own capacity was sufficient⁹⁹. And, since SARS, China’s role in the whole international response has also been a focus of debate, with reporting and engagement with the international system being less than consistent.

With the refusal by the Indonesian government to supply human influenza virus samples or data to the international system in early 2007, the assumptions of the international governance system were put firmly to the test. High level meetings, diplomatic negotiations, behind-the-scenes deals and much media speculation characterised months of tense relations, culminating in a meeting held in March 2007 at which a deal was more-or-less brokered¹⁰⁰. Wider discussions around

⁹⁶ <http://www.twinside.org.sg/announcement/Joint.NGO.Statement.on.Influenza.Virus.Sharing.htm>

⁹⁷ <http://www.fao.org/ag/CGRFA/itpgr.htm>

⁹⁸ <http://www.scottmcperson.net/journal/2007/8/1/singapore-meeting-might-return-us-to-those-thrilling-days-of.html>

⁹⁹ <http://www.bio-medicine.org/medicine-news/WHO-Commends-Indias-Bird-Flu-Response-8125-1/>

¹⁰⁰ <http://www.who.int/mediacentre/news/releases/2007/pr09/en/index.html>; see also Nature (2006a);(2006b)

the access to research data, and the establishment of the OFFLU network (the joint OIE-FAO network of expertise on avian influenza) by Dr Ilaria Capua¹⁰¹ have sent strong signals about the importance of transparency. Commitments are now in place for transparent sharing of data and virus samples, and an initial global influenza virus tracking system has been launched by the WHO¹⁰². But the test will be in the practice, particularly if a pandemic emerges.

The lessons from this episode are less about the mechanics of virus and information sharing than the political consequences, and the implications this has for visions of global governance. The WHO's position at the centre of the network has to be earned, and respect and recognition of new important economic and political players must be part of this. As one informant observed:

The virus sharing controversy was a shock. WHO is old style, not transparent. People are not impressed by symbols any more. Even the Red Cross. They are not impressed by doctors and big organisations. This is a good thing, but problems arise¹⁰³.

Another observed:

That is a very delicate one... the issue of IHR and sharing of information is really, really critical...when we are talking about a world that is so interconnected I think it's difficult to use the word sovereignty in areas where there is a potential for spread beyond boundaries¹⁰⁴.

Another reflected:

It [the virus sharing issue] has been very awkward. WHO has been seen to be at fault, as far as member states are concerned. So it is difficult for WHO to intervene. It is an unusual situation... Yes, the system did need overhauling. For 50 years people did not realise that viruses got shared, and handed on to pharma companies... But the issue was not brought forward in a way that the multilateral system is able to deal with¹⁰⁵.

The broader reconfiguration of the geo-politics of health policy has ramifications across the policy process. A focus on access and rights – particularly for those who had not normally been at the table, notably big pharma and northern governments – suggest another important reframing of the debate making the simple formulations of 'global governance', and the associated slogan of 'One World, One Health', more difficult to realise than perhaps was first envisaged.

¹⁰¹ <http://www.offlu.net/organisation.php>

¹⁰² http://www.who.int/csr/disease/avian_influenza/aivirus_tracking_system/en/index.html; although the effectiveness of the deal was being questioned, see: <http://www.america.gov/st/washfile-english/2007/August/20070813131101cnirellep0.6877405.html>

¹⁰³ Interview, Geneva, 5 March 2008.

¹⁰⁴ Interview, New York, 9 June 2008.

¹⁰⁵ Interview, Geneva, 5 March 2008.

All of these alternative narratives are being actively debated within the organisations at the core of the international response actor network. But they are to date having limited purchase on the mainstream outbreak narratives. However, as the international avian influenza response continues to unfold, the consensus is always open to disturbance, as the virus sharing controversy dramatically showed. At the end of this paper we will return to the suggestive implications of these alternative narratives, and explore what they imply for a programmatic definition of the One World, One Health agenda in terms that move beyond simplistic globalism and the outbreak narrative.

8. ORGANISATIONS AND INSTITUTIONS

The avian influenza response involves a huge array of institutions, initiatives, programmes and projects. Acronyms fly in a bewildering mix. AHIF, AHITF, CFIA, CIDRAP, CMC-AH, DFID, EC, ECDC, ECTAD, EMPRES, EPR, FAO, GAINS, GF-TADS, GIS-AID, GLEWS, GOARN, GPAI, IPAPI, JICA, , OIE, OFFLU, PAHO, PHRD, PIC, SFERA, UNICEF, UNSIC, USAID, USDA, USCDC, WFP, WHO, WIC and many, many others are all involved in the international response – and many have been created by the new in-flows of funds¹⁰⁶. There is much political positioning, turf warfaring and squabbles over mandates and funds, as we have seen. But this is normal practice, largely to be expected when something big and new arrives on the horizon, especially when attached to large amounts of money. The key question must be: is this evolving institutional and organisational architecture the most effective and efficient – and does it improve resilience, and the ability of the world to respond to new, uncertain, surprise-laden events? This is a more open question.

¹⁰⁶ AHIF Avian and Human Influenza Facility; AHITF Avian and Human Influenza Task Force; CFIA Central Fund for Influenza Action; CIDRAP Center for Infectious Disease Research & Policy, University of Minnesota; CMC-AH Crisis Management Centre for Animal Health; ECDC European Centre for Disease Prevention and Control; ECTAD Emergency Centre for Transboundary Animal Diseases; EMPRES Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases; EPR Epidemic and Pandemic Alert and Response; GAINS Global Avian Influenza Network for Surveillance;

GF-TADS Global Framework for the Progressive Control of Transboundary Animal Diseases; GIS-AID Global Initiative on Sharing Avian Influenza Data; GLEWS Global Early Warning and Response System for Major Animal Diseases, including Zoonoses; GOARN Global Outbreak Alert and Response Network; GPAI Global Program for Avian and Human Influenza Control and Preparedness; IPAPI International Partnership on Avian and Pandemic Influenza; OFFLU OIE/FAO Network of Expertise on Avian Influenza; PAHO Pan American Health Organization; PHRD Policy and Human Resources Development (World Bank-managed Japanese Trust Fund); PIC Pandemic Influenza Contingency; PVS OIE Performance, Vision and Strategy; SFERA Special Fund for Emergency and Rehabilitation Activities; UNSIC United Nations System Influenza Coordination; USCDC United States Centers for Disease Control and Prevention; WIC World Influenza Centre.

In order to gain some insights into this, we start with a closer look at the surveillance, information, prediction and early warning infrastructure which has been built – or in most cases extended – across the core organisations. Accurate surveillance, timely information, useful prediction and clear early warning are critical for any response – for avian influenza or any other epidemic. Time and accuracy is everything. Consequently this has been a focus of much investment in this area. Staff numbers associated with the ECTAD (Emergency Centre for Transboundary Animal Diseases) group at FAO for example have expanded from less than ten to around 200 in just a few years as a direct result of avian influenza investments. This group collates information from a range of sources and assesses the spread of animal diseases around the world. Linked to the OIE reporting system, where CVOs must report to Paris any notifiable animal disease, and the public health surveillance system coordinated by WHO, the ECTAD group make regular updates and assessments to help focus the international animal health response. However, those working there are realistic about what such a system can and cannot do.

We quickly reach the limit of our system. We need expertise in the corridor to recognise what is going on. Surveillance is very different between countries: Indonesia and Nigeria for example. For the latter, there were no reports in September. In Indonesia they are looking and finding it. But again we are tracing events, not the situation in the country. Reporting in X is very poor. If they report, it's because everyone already knows. The key question, when it gets serious, is the high level of expertise we need in the corridor. It is more and more difficult to find good people¹⁰⁷.

Thus judgement and local expertise remain key, and this is where the system sometimes falls down. Reluctance by veterinary services to report outbreaks, or farmers in fear of the consequences; the lack of field staff in-country and poor understanding of underlying epidemiological dynamics, all add to an air of uncertainty despite the fine coloured maps and interactive websites. Several people noted that most of some islands of Indonesia are covered in red dots (outbreaks) because there is an intensive, and very expensive, disease search presence there funded by the US. But as one informant put it: "This doesn't mean that those bits of Indonesia that are blank, or other parts of the region that are not plastered with red dots, do not have the disease – just look at the map, it doesn't make sense"¹⁰⁸. This realistic and honest assessment points to the basic problem of surveillance – if there is poor trust in veterinary services, or if field-level capacity is weak, then reporting is going to be patchy. The maps in many cases report, not the overall pattern of outbreak, but the intensity and capacity of surveillance efforts.

On the human health side, things are a bit more straightforward. Hospital reporting tends to be reasonably accurate, and diagnosis is straightforward if samples are sent to a lab. But of course not every case presents at a hospital, and not all hospitals and clinics will send samples, although the severity of HPAI in human

¹⁰⁷ Interview, Rome, 1 February 2008.

¹⁰⁸ Interview, Rome, 1 February 2008.

cases and the level of at least reported mortalities is very high¹⁰⁹. The WHO system involves data collection from a wide range of sources, including official reporting. The GLEWS network (the Global Early Warning System for Major Animal Diseases, including Zoonoses, a WHO-FAO-OIE partnership)¹¹⁰ includes scans of media reports and websites for early indications. They make use of the Canadian Global Public Health Intelligence Network (GPHIN), which includes media and internet searches across several languages, and the ProMed reporting system, along with the Global Infectious Diseases Epidemiology Online Network (GIDEON) database¹¹¹. In addition, there are 'outbreak hotlines' which people can contact – an email address (with a blackberry which is reputedly responded to around the clock) and a phone number. There are also inputs from informal reports by WHO field officers, members of the GOARN (Global Outbreak Alert and Response Network)¹¹² teams and others who are contacted when suspicions are aroused (Heymann and Rodier 1998, 2001, 2004). Information is one thing, but verification is another. Formally this has to be through notification by national governments' health ministries – or designated WHO contact people – confirmed by lab tests, initially locally, and then in WHO reference labs. But such verifications can be slow in coming, and WHO personnel, particularly specialists in the influenza must make their own assessments. As one informant put it:

The internal risk assessments are heavily based on expert opinion. We don't have the data to say these are valid variables. Our experience is what matters. We look at anecdotal things – the likelihood of reporting and so on; stories about the hiding of information – people who went to the doctor but did not say they had poultry. There is more risk where people are hiding. It cannot be quantified though. The long term goal is to validate the variables, ideally with FAO. But now it is expert opinion and many uncertainties...For example, in some places there is lots of viral circulation, but little exposure because of well constructed wet markets. But in other places it is the opposite. We can say – if you want to lower risk you can do this or that. Yes, we would love to do it on a local basis, but the data is simply not there. We realise that things are different in different parts of a country. Look at China! How can you look at Tibet and Guangdong in the same assessment?¹¹³

Thus, as with some other zoonotic diseases, early information often comes from human reporting, rather than assessments of the animal health situation¹¹⁴. This is worrying, as catching things early and spotting and eradicating major avian outbreaks quickly is seen as central to the wider public health response. In practice, we have a situation in a number of countries where the avian disease is entrenched and occasional human outbreaks are treated – although in a large number of cases

¹⁰⁹ <http://jech.bmj.com/cgi/content/abstract/62/6/555>

¹¹⁰ <http://www.who.int/zoonoses/outbreaks/glews/en/index.html>

¹¹¹ http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk-eng.php; <http://www.promedmail.org/pls/otn/f?p=2400:1000>; <http://www.gideononline.com/>

¹¹² <http://www.who.int/csr/outbreaknetwork/en/>

¹¹³ Interview, Geneva, 7 March 2008.

¹¹⁴ This was the case with a rift valley fever outbreak in Sudan for example in November 2007, see: http://www.who.int/csr/don/2007_11_05/en/index.html

the patient dies. Monitoring this situation, however, for signs of any pandemic pattern remains key, and so investment in surveillance systems is a top priority – across human and animal settings.

A central challenge for zoonotic diseases is thus to coordinate surveillance across animal and human populations. As discussed, disparities in information quality and accuracy make this difficult, but across the international system there is a working attempt. This involves daily morning tele/videoconferences between the WHO and FAO emergency centres (the SHOC room in Geneva and the CMC in Rome), with interactions intensified with OIE and others when new outbreaks are defined. There is clearly an effective, collegial interaction across the agencies, helped by a few key individuals who have experience across the human and animal health areas. By all accounts this works well – and in many people’s eyes this represents unprecedented coordination and integration, helped along by funds to be sure, but also by a committed set of professional individuals.

But the surveillance case presents some important organisational dilemmas. First, there is the question of coordination from local settings to global information systems. This is often not effective, especially where capacities are weak and suspicions are rife at the local level. As one informant put it: “What has been done does not follow a clear plan. There are overlapping mandates, rivalries, lack of clarity, unsustainability. There has been fudging of solutions”¹¹⁵.

This relates to wider politics of information, and fears that supplying potentially sensitive information will have negative consequences. This applies to farmers clearly, but potentially also to national authorities who fear heavy-handed intervention in their affairs from outside, legitimised by human health issues and the IHR of 2005. As Calain (2007a, b) cogently points out, at the heart of surveillance activities there is often a clash of mandates and expectations, with international agencies potentially at loggerheads with national authorities. With global public health and wider security agendas deeply intertwined, the politics of surveillance is highly contentious. Such wider political tensions are compounded by more basic administrative and capacity issues at local level, with front-line health professionals resisting new surveillance efforts as they see redundancy and overlap in activities and competition for time, attention and budgets. As Calain (2007b:19) concludes, there is little doubt that the profusion of surveillance efforts “is essentially geared to benefit wealthy nations”, making suspicion, reticence and low levels of commitment understandable.

Second, there are professional, disciplinary and organisational divides that affect the cultures and practices of day-to-day activity. Vets and medics do not always have the same perspectives, as we were told repeatedly in our interviews. As someone put it “there is that distinction I think that somehow treating the animal is less...yes, less noble, than treating people. So you just wait for the people to get infected!”¹¹⁶.

¹¹⁵ Interview, Rome, 30 January 2008.

¹¹⁶ Interview, Washington DC, 13 June 2008.

Another observed:

The thinking between vets and medics is really, really separate. It’s challenging. That is a big one to overcome. It assumes there is no crossing over. The minds are still that way, even if they are working on something like avian influenza. We have to overcome these challenges. Everything is a problem. Human doctors think it’s a human disease. But they have to be reminded it is an animal disease! On the animal side, they forget the human element...There is this huge diversity of thinking. The lab bench people get along quite well. But getting others in the room...that’s hard. When people do get together, people tend to have very political discussions. We need better technical collaboration¹¹⁷.

Another commented:

There is mistrust between the two castes – the doctors and the vets. It has prevented lots of collaboration. There is a slight complex of inferiority among the vets. And there is a big complex of superiority among the medics¹¹⁸.

This affects the way interactions are conducted, and only when personal interactions take over do such difficulties die away. This is compounded by different interpretive styles, ways of assessing information and evidence and ways of framing responses. Yet, while difficult to pinpoint, medics and vets see outbreaks in different ways: a single case of a human may be enough to spark a reaction, yet thousands of chickens must die before anyone really notices. And in response terms vets have a wider range of actions at hand – birds can be culled, movements can be restricted and treatment enforced, whereas for humans draconian interventions are all a bit more difficult.

Third, there is the tricky question of what information is made public, what is kept quiet and how things are presented. This was a subject of some discussion with informants in both WHO and FAO. While there are plenty of outbreak maps and alerts, these have to be understood with caution, as we have already discussed. Are these presenting an accurate picture of risk or do they represent, in fact, substantial ignorance and deep uncertainties? One informant recognised the responsibility of her position: “Yes, we come up with numbers. But I won’t let anyone see them. It’s very dangerous to release such numbers”. Thus, despite all the technical paraphernalia, and scientific protocols and procedures, there are after all human beings at the centre of information systems. They must make judgement calls: inevitably they black-box uncertainties, ignore some data, and emphasise others. This is based on expertise and experience, which is why they have the job. But this inevitably carries its own biases – personal, disciplinary, institutional. Here the ‘outbreak narrative’ and an emergency framing of the response often comes into play, and events (outbreaks, infection cases, mortalities) are emphasised over processes, and the less tangible, less easily recorded dynamics of slow spread or endemism.

¹¹⁷ Interview, Geneva, 7 March 2008.

¹¹⁸ Interview, Geneva, 5 March 2008.

Finally, there is the response to risk information and early warning alerts. Who believes it? Who wants to believe it? In studies of early warning systems in other fields (cf. Buchanan-Smith and Davies 1995), a 'missing link' between early warning information and response has often been found. As, if there is scepticism about the information, fear about the consequences and uncertainty about everything, it is not surprising that some calls are not heeded. This puts pressure on those handling information, constructing maps and presenting statistics to up the ante: fear and danger is always a good spur to action, it is thought. This may help, but it may also undermine – as people either panic or laugh at exaggerated statistics.

This look at the surveillance infrastructure highlights a number of important features of the disease response architecture today, as well as some important dilemmas. The emphasis on cross-border responses, and the international dimensions of epidemic responses are clearly significant. Disease and health is no longer just a national concern. The IHR make this very clear. Ceding sovereignty in the face of global threats is an important wider discourse in foreign affairs and international relations thinking today. Is there a global 'responsibility to protect' – to intervene where sovereign processes are failing, on behalf of 'humanity'? Are rights universal, and therefore to be upheld universally through international jurisprudence and institutions? And does this all give excessive power and influence to international institutions, whose lines of accountability and forms of governance can be questioned?

And how should such a global response be organised? Amongst the grand talk of international responsibility, universal rights and humanitarianism there are some more practical concerns. We have inherited a set of institutions designed for a different time and a different set of purposes. The modernist, humanitarian, developmental mission of the UN looks sometimes a bit outdated given the growth of new powers, the influence of transnational capital, philanthropic funding and the type of challenges and threats faced today. The UN's accreted structures look creaky, inefficient and expensive to many, and often grossly ineffective. Simon Maxwell for example, argues that "the international system is clunky, unrepresentative and out of date", that there is "system failure"¹¹⁹. In a similar vein, a UK government submission to the July 2008 House of Lords Select Committee report noted how "the current architecture is crowded and poorly coordinated. Within the diverse group of organisations there is no agreed vision or clarity over roles"¹²⁰.

Much of this relates to the cumbersome governance structures of the UN agencies. With national governments as members, and with political appointments, often without the relevant technical expertise, of permanent representatives through the organisations, it is not surprising that national or regional bloc interests sometimes

¹¹⁹ Developments Magazine <http://www.developments.org.uk/articles/system-failure>

¹²⁰ Diseases Know No Frontiers: How effective are Intergovernmental Organisations in controlling their spread? <http://www.publications.parliament.uk/pa/ld200708/ldselect/ldintergov/143/143ii.pdf>, Para 92, page 34.

overshadow global, strategic goals. A long-term squeeze on core finances, certainly of FAO and WHO, means special-interest politics meets stark economics in the running of these organisations. With the coffers filled through project funds, often with an 'emergency' label, it is easy to see how strategic directions get diverted and organisational dysfunction emerges. Similar challenges are faced by the non-UN, inter-governmental organisation, the OIE. Here governments are represented through technical specialists, usually the Chief Veterinary Officer, so policy-making is dominated by the special interests and concerns of the veterinary profession, rather than political concerns. Clearly, none of these arrangements is ideal and, for the case of the avian influenza response, they have clearly presented some significant obstacles.

These kind of complaints, and the resulting agenda for UN reform, have of course been around for decades, but there are many voices arguing for a new international institutional architecture today. In a major speech on foreign policy delivered in Boston in April 2008, UK Prime Minister, Gordon Brown, argued how a total rethink of the international architecture was necessary for today's problems. Such views are echoed by many others, not least US Presidential candidate, Barack Obama¹²¹. The often tetchy relationship between the UN and the Bretton Woods institutions is at the centre of this, together with the relationships between these global institutions and the new conventions, protocols and regulations that have emerged to provide for 'global governance'. Does the system need a total overhaul, almost a starting from scratch, or is the current international architecture broadly 'fit for purpose' but in need of a few teaks and revisions?

The international response to avian influenza was perhaps a test case for this debate. Did the international system adapt effectively and perform well, or is it in need of some major reworking? Informants we talked with had diverse views – scattered along a spectrum. Several were very positive. One commented:

Avian influenza has seen some of the most effective coordination between international agencies I have ever encountered... people will ask: what did it all achieve? There was no pandemic. But that surely is one big tick. We also can say that we looked at all sorts of things in new ways, and put money into veterinary systems, standards, disease surveillance, PHC [primary health care] services and so on. These are all good and useful things¹²².

Everyone agreed that positive lessons had emerged. In the area of animal health, issues of confused mandates and overlapping responsibilities had been raised by a recent, highly critical, external evaluation¹²³. This questioned why the OIE and the FAO Animal Production and Health Division seemed to be doing similar

¹²¹ <http://www.number10.gov.uk/output/Page15303.asp> http://www.cgdev.org/doc/blog/obama_strengthen_security.pdf

¹²² Interview, London, 25 January 2008.

¹²³ <http://www.fao.org/pbe/pbee/en/219/index.html>

things, and argued for a clearer separation with a recapturing of the development agenda by the FAO, leaving the standard animal health policy matters to the OIE. Some went further and argued for a merging of the two into a single organisation to improve coordination and effectiveness, avoiding the on-going turf wars and overlaps. This analysis was, not surprisingly, rejected by those within the OIE and FAO who pointed to their distinct mandates and effective coordination, especially around avian influenza. As one informant put it: “[despite the criticisms], all the FAO has to do right now is shout avian flu, and people will shower them with money!”¹²⁴ And they had a point: once early squabbles subsided, the working relationship has been relatively smooth and improving, and substantial funds followed. Another informant suggested: “We are now just a normal dysfunctional family!”¹²⁵

A more radical assessment voiced in a few quarters was that there is a need for a new organisation which focuses explicitly on zoonotic emerging infectious diseases, and brings together vets, medics and communication specialists under one roof, allowing surveillance systems, information and early warning, regulatory arrangements, capacity strengthening, scientific research and broader policy frameworks to become integrated and aligned in one set-up. This has a logical appeal. However, most of our informants (of course many with vested interests in some form of the status quo) rejected such a scenario. Many pointed to what they felt were the failings of UNAIDS¹²⁶. One informant told us: “We did not want to make an institution like UNAIDS. We wanted to make something that could vaporize in a puff of smoke; that could create space for others.”¹²⁷

The formula adopted for the avian influenza crisis did not go down ‘the UNAIDS route’, but involved a lighter-touch coordination group based in New York. The office of the UN System Influenza Coordination (UNSIIC), within the UN Development Group, was established, as discussed earlier, at the direct request of the Secretary General, likely with lobbying from the then DG of WHO, Dr Lee Jong-wook. The assumption was that this would provide a coordination, profile-boosting and fund-raising function, which would have direct links to WHO in Geneva, which, it was assumed, would take on the main implementation activities, as this was framed at that point very much as a public health pandemic threat.

This of course did not happen, and for good reason. The veterinarians, while slow to get going by many accounts and being ‘poor at politics’, were soon accepted as important players. And because of the Japanese funding deal, UNICEF was brought into the fold. Much to the resentment of many in the UN system, the World Bank was brought on board too (it had first formed a bank wide team in October 2005, and had a major seat at the first international conference in Geneva

¹²⁴ Interview, London, 25 January 2008.

¹²⁵ Interview, Rome, 30 January 2008.

¹²⁶ See the recent independent evaluation: <http://www.unaids.org/en/AboutUNAIDS/IndependentEvaluation/default.asp>

¹²⁷ Interview, London 27 February 2008.

in November), with a special trust fund established to manage grants and loans. The World Bank, it was argued, brought different expertise and capacity to the table – offering both an overall economic development outlook and transparent and accountable funding mechanisms which were easy to manage and report on. One Bank insider commented:

The Bank had something to offer, but it was intangible. Sometimes it was knowledge, sometimes it was just to bring a bit of order in a process where people had really strong technical views and needed a little help to put it together... The Bank is good at cross-sectoral, institutional issues, looking at things from an economic perspective and avian influenza touches so many different sectors... But the Bank can be portrayed as a non-technical agency strutting about telling everyone what to do. We’d say we are just articulating a framework that can be supported financially. But there’s a fine line between setting up the architecture and pushing everyone inside the building and telling them they have to live there¹²⁸.

David Nabarro, who was given the job as Senior UN System Coordinator in September 2005, proved a brilliant networker and facilitator. While different people have (very) different views about his role, all acknowledged his political acumen and energy¹²⁹. UNSIC then became a focal point, envisaged by those inside as facilitating a ‘movement’ within and beyond the UN:

The relentless efforts by David Nabarro have kept things moving. The Action Plan was an attempt at a coordinated approach: 12 agencies. It had never been done before. A great achievement, it created bridges. WHO is now being harassed by other organisations to allow them to get involved... All agencies now want to be involved – tourism, migration, civil aviation etc. Everyone wants to be involved in global health issues. This is good. It breaks down barriers. Even if UNSIC stops something will be left behind. A movement has been created¹³⁰.

This framing, which avoids models of a fixed, permanent organisation, is interesting and strategic. The focus was on facilitation, on ideas, on getting people talking to each other, on building bridges sometimes over huge gulfs – and raising money.

¹²⁸ Interview, Washington DC 12 June 2008.

¹²⁹ Examples of positive commentaries included: “David Nabarro was a great factor in raising the funds. He is very effective at loosening the purse strings. UNSIC is a real focus for the effort and policy. David’s tub thumping speeches helped raise the profile” (Interview, London, 25 January 2008); “The role played by UNSIC has been very significant. You have someone that can network and pull people together so easily, this is something that we need to better understand how we can use this model in the future for coordination. It is a coordination function and also an energising function, and one that ensures communalities are shared... there’s been the recognition that there are quantifiable merits with the model - cost is miniscule and the benefits are extremely significant, but it requires a mandate.” (Interview, New York, 9 June 2008). There were detractors too: “UNISC is now becoming irrelevant, that’s my personal view, but communications between agencies is now better, even if UNSIC is not co-ordinating it.” (Interview, New York, 9 June 2008). See also Cheng and Nabarro (2006) and the recent evaluation of UNSIC (Willitts-King, Smith and Sims, 2008).

¹³⁰ Interview, Geneva, 7 March 2008.

The movement metaphor provided UNSIC with a vision and mission – in the system, yet outside; cooperating, yet challenging. There was genuine excitement and enthusiasm: this was the future.

Normally I am sceptical, not excited about what we do. Here we are doing something important. Long term. This is a process that will mark a period of history...There is a need to be flexible, so that people can pull institutions with them. Not very much has been formalised... It is an interesting moment. We have been lucky: 15 - 20 committed individuals made the difference¹³¹.

UNSIK did a very good job, bringing organisations closer together, defining tasks for the core organisations, getting the issue onto the political agenda in many countries. Now, three years further on, I am not so convinced of the added value of UNSIC, trying to get out of coordinating and into a leading role. This is not their job - they should be leading with agenda setting, defining priorities, with the World Bank¹³².

The sense of personal connection and commitment was apparent too. As someone closely involved reflected: "It wasn't enough to say here is something for the global public good. We first had to build relationships"¹³³. Others commented on the way a network was built:

They got to know each other too. You get a community of involved people... Everybody, everybody is there. The main donors, the countries, US, Japan, the European Commission, the UK, Canada, Australia, in terms of the very active ones. And then the main organisations - OIE, WHO, FAO. They are all on first name terms now¹³⁴.

Several years on, there are widely divergent views on the UNSIC experience. Some argue that this is a model for the future of the UN, and should be central to any UN reform strategy. It allows coordination across agencies – and, critically, beyond the UN – it allows funds to flow efficiently and be properly managed, and it allows the technical agencies to do what they do best. Others disagreed. They saw gradual 'mission creep' and interference in what should be technical mandates of technical agencies by those who did not know what they were talking about. They saw funds being managed by the World Bank trust funds and not them, and, they argued, a reduction in core funding to the technical agencies which became increasingly reliant on short-term loan based funding from World Bank managed sources. And they saw competition for power, prestige and authority. As agency mandates moved to the centre they became more politicised and controlled. Whether this was just sour grapes of insightful analysis is difficult to tell, but the debate has certainly influenced the policy process. UNSIC remains key, but its future – or the future of similar cross-cutting coordinating bodies – remains up for debate.

¹³¹ Interview, Brussels, 4 March 2008.

¹³² Interview, London, 13 May 2008.

¹³³ Interview, New York, 9 June 2008.

¹³⁴ Interview, Washington DC, 12 June 2008.

The avian influenza response has therefore raised some fairly fundamental issues about organisational arrangements and institutional architecture at the global level. The coherence and coordination, though flawed, found at the global level, is not matched at the local or national level. This problem is particularly acute in more aid-dependent countries, where projects, programmes, strategies sometimes trip over each other. Apparently in 2005, Vietnam had almost 800 donor missions in one year¹³⁵. One informant commented: "In Cambodia there are 22 donors active in the health sector. There are over 200 NGOs also and 109 projects. You can imagine how useful it would be if everyone could work in a coordinated way"¹³⁶. In the context of UN reform debates, and discussions about organisational change more generally, these are familiar issues. The prospect of a one-stop-shop approach to country-level delivery by the UN may, in these circumstances, have many merits¹³⁷, yet substantial challenges remain on the ground¹³⁸. Much of the impetus for a coordinated response to avian influenza indeed came from demands at the country level. However despite the successes, some major challenges for the future are pointed to.

First are strategies for managing overlap in mandate and function to ensure efficiency and coherence, resulting in 'optimal redundancy' for 'high reliability'. In highly complex dynamic situations, where surprise and uncertainty is always present, designing neat organisations that can respond to all possible circumstances is impossible – and probably dangerous. It is necessary to accept a certain messiness, which inevitably involves a level of redundancy, to ensure that a 'high reliability organisation' (Perrow 1999; Weick and Sutcliffe 2001)¹³⁹, with enhanced system resilience, can respond to the inherent uncertainty. In addition to some level of redundancy, important design features include: flexible organisational architecture, a commitment to experimentation, learning from failure, continuous reinvention as adaptive response, prioritising anticipation as well as resilience, and lines of authority which are clear and simple. In many respects, by default rather than design, core aspects of the current avian influenza response system do mirror some aspects of these features. What is needed is to enhance these further.

Second, as already discussed, coordination across technical areas, agencies and functions has been a major issue. This is a critical feature of the response to any zoonosis, whether avian influenza or others. Here there is a huge array of organisations involved. As one respondent put it: "We are working with our

¹³⁵ Comment by S. Tyson from DFID, in: <http://www.publications.parliament.uk/pa/ld200708/ldselect/ldintergov/143/143ii.pdf>, para 150, page 52.

¹³⁶ Interview, Washington DC, 11 June 2008.

¹³⁷ See details on the 'Delivery as One' pilot projects at: <http://www.undg.org/?P=7> and the High Level Panel report of November 2007: http://www.undg.org/archive_docs/9021-High_Level_Panel_Report.pdf and <http://www.un.org/events/panel/>

¹³⁸ The country-level studies which are currently being completed explore this issue from the standpoint of different country experiences, including that of Vietnam, a pilot 'One UN' country. See <http://www.steps-centre.org/ourresearch/avianflu.html>

¹³⁹ <http://www.highreliability.org/index.html>

international partners, both NGOs and international agencies and that's hard. 'Herding cats' is the phrase we are using"¹⁴⁰. The role of UNSIC – and the IPAPI group – have been important, but there have been blockages and constraints to joint working, although many have been at least partially undone over time. One informant complained:

There is collaboration and it is useful but you'd be surprised at the looks of horror when you say - wouldn't it be a good idea if every time you had an animal case someone rang up the human health people so you could send out a team together and check the people too. At the big meetings... what inevitably happens is that WHO makes a little speech, FAO makes a little speech, David Nabarro makes a little speech, and OIE too, who maintain their vigilant independence from the UN system... This sends the wrong message. The whole effort, the whole ethos of this has been to coordinate, to integrate. Yet when we get to tell the world how well we work together, we do it individually!¹⁴¹

Whether there needs to be more integrated organisational arrangements to bring things together is a much disputed point, but certainly more joint working and collegial interaction across divides is needed, as many informants agreed. For example, Jakob Zinsstag from the Swiss Tropical Institute argues for a more integrated system of local level para-veterinary and para-medical support for Africa¹⁴² and others have made the case for integrated training systems, such as joint veterinary and medical schools¹⁴³. And, in the wider pandemic preparedness challenge, the set of players becomes even larger. One informant said:

The focus has to be not only the human and animal health side, but also these other elements in terms of pandemic planning, some other elements of society... Now when you look at FAO, they are not going to sit there and say 'my biggest concern is the continuation of the financial services sector'. It requires a bigger picture.¹⁴⁴

Third, is the issue of mandate and responsibility. Currently mandates are largely technically defined, and present major technical, professional and disciplinary divides as we have discussed. These can be real obstacles to effective working, as they perpetuate some basic misunderstandings and prejudices; and such divides can be reinforced by personalities, fiefdoms and territories. The avian influenza response, just as any other internationally coordinated activity, has resulted in some major 'big men' problems, where personality clashes have soured relationships. Many of these divides have been over ownership and control of particular technical areas, and so funds and authority. Bringing the 'two castes' of vets and medics together in particular, but also, we would argue, social scientists of various sorts, must be a

¹⁴⁰ Interview, Washington DC, 11 June 2008.

¹⁴¹ Interview, Washington DC, 11 June 2008.

¹⁴² <http://www.sti.ch/datensatzsammlung/newsletter/newslettermarch08/onehealthzinsstag.html>

¹⁴³ This is an example of one the few cases of this sort of initiative: <http://www.vetmed.vt.edu/news/vs/oct05/index.html#dvmmp>

¹⁴⁴ Interview, Washington DC, 11 June 2008.

major challenge for the future, although challenging to achieve given institutional and professional histories. This may require some basic re-thinking about training (joint vet/medic schools or courses), re-skilling (social scientists with understandings of epidemiology and technical scientists with social science skills), and professional incentives (for joint working, publishing across sectors and disciplines and so on), and job descriptions/recruitment strategies (vets in WHO, and medics in FAO or OIE, for example, with social scientists in all organisations). One informant pointed to the biases in the professional advice systems as currently structured:

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 governments 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... The lack of epidemiological and economic skills is very frustrating. The specialists that exist know the exact changes of amino acids in the virus, but nothing much else. The bigger picture is lost¹⁴⁵.

Fourth, there have been some important lessons about funding: raising it, managing it and spending it. A joint approach, across agencies, to raising funds has clearly been a major success (or was for a while). Major pledging events, even if expensive, add profile, and attract senior figures. Over 1,000 people turned up for the Beijing pledging conference, including more than 50 ambassadors and ministers, from over 100 countries. This large and diverse attendance allowed funding agencies, and the bureaucrats involved, to pitch for funds from pots that might not otherwise exist. The high political profile of avian influenza, particularly following US President Bush's September 2005 speech, meant that emergency funds, not just development funds, started to flow. Consequently the amounts far exceeded those that would be realisable under normal budget envelopes. Spending so much money efficiently and effectively – and on time, however, is not easy. The World Bank trust fund mechanism proved a useful approach, although some argue that this diverted funds away from core activities in the technical agencies. One well justified complaint, however has been that funds have tended to end up with the core agencies and not with national governments. In a reflection on progress so far, the technical meeting held in Rome in June 2007 concluded candidly that:

Contrary to the stated intent in Beijing to ensure that the majority of funding was made available directly to countries in support of their national avian and human influenza programmes, analysis of recipients of funds indicates that less than half of total funding is going to countries; so far non-national recipients such as regional organisations and the United Nations are the main recipients of the funds that have been disbursed¹⁴⁶.

¹⁴⁵ Interview, UK, 11 March 2008.

¹⁴⁶ Food and Agriculture Organisation (2007c) <http://www.fao.org/docs/eims/upload//232772/ah668e.pdf> (para 5.1b, page 29).

This highlights the problem of disbursement. While coordination may have been at least partially effective at the international level, it has rarely been so at country level. This has made project funding in the field difficult, and integration even more so. As mentioned before the type of funds also made a big difference. Many of the funds were earmarked 'emergency' funds on short time frames, requiring a rapid spend; others were loans through the World Bank system, and so carrying with them the potential for debt; and many were 'soft' project funds, providing plenty of cash, but only over short periods and without the overhead to invest in core support. The result has been a projectisation of activity which has resulted in some unfortunate overlaps, high transactions costs and an expansion of staff on short-term, consultant-style contracts, without longer term institutional commitments.

Finally, there is the question of monitoring and learning approaches and systems of accountability. UNSIC has provided an invaluable function of collating data and providing updates on activities and expenditures. The December 2007 report is in many senses exemplary, cutting, as it does, across so many fields and activities and involving so many people and resources¹⁴⁷. To get a bird's eye view (so to speak) of the avian influenza response the report is clearly the first port of call. For donors and others this reporting provides an important level of accountability. But how much has this been just a data collation exercise, based on often unverified data sources, and not one that enhances more fundamental reflection and learning on the basis of experience? These systems seem to be less in place. The real-time evaluation of the FAO went through several iterations before a useful document emerged. Some of its key findings were then rejected by the management (notably the recommendation to appoint a dedicated operations manager)¹⁴⁸. While allowing a detailed, forensic look at performance and practice in real time, the evaluation did not seem to generate much reflection and learning – more animosity and defensiveness. Indeed, donor influence had a lot to do with this. As one participant in the evaluation explained:

The US said: 'we are only interested in containment'. This was the US rep with a prepared statement. 'Get the big cannons out! Throw everything at it! That Iraq thing again. And they are by far the biggest donor...The US context is that avian influenza 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 things¹⁴⁹.

In the end it is difficult to know what is being monitored against what and for whom. Most activities to date have been aimed at assuring donors that money has been spent well. But measures of impact and effectiveness – and focal points around which learning needs to be emphasised – have not been identified; and if they

¹⁴⁷ <http://www.undg.org/docs/8097/12-18-07-UN-WB-AHI-Progress-Report-final.doc> and

¹⁴⁸ <http://www.undg.org/index.cfm?P=52>

¹⁴⁹ <http://www.fao.org/pbe/pbee/en/index.html> (see both main report and management response)

Interview, Rome, 30 January 2008.

have been they tend to be sectorally bound, relating to a particular framing of response. A bigger questioning of effectiveness, efficiency and boosting resilience – and particularly the distributional effects (who wins, who loses) have not been investigated. This breeds a complacency that might have spilled over into some of the 'forward look' discussions around the 'One World, One Health' agenda. We would argue that a more searching reflection on 'framing assumptions' (or in monitoring and evaluation language, 'theories of change') is needed, and one that brings in other voices and perspectives to create a wider basis for accountability, beyond that required by donors. We will pick up on this theme in the conclusion.

In the end of course, it is difficult to assess whether the organisational architecture that has evolved for the avian influenza response, incrementally, often chaotically and with many flaws, has worked well or not. We have not had a pandemic: that may be an indicator of success, or not. Yet, the virus has spread over a large part of the world, and has become endemic in a number of countries where continuous outbreaks occur. More than two billion chickens have been slaughtered as a result of the interventions galvanised by the international response, with major impacts on businesses, markets and livelihoods. A number of new systems have been put in place – surveillance, information management, early warning, public communication; and human health and veterinary services have been strengthened in some places. Are we therefore better prepared, more resilient than before? No-one knows.

A fear of the unknown of course feeds into a set of concerns about 'security' which are at the heart of the debate about avian influenza. These security discourses, however, require some unpacking in order to understand their impact on the politics of the policy process. This is the aim of the next section.

9. SECURITY DISCOURSES

As we have seen, the wider political forces – particularly in the US, but also in the EU, Australia and Japan – push for a set of responses that emphasise the protection of healthy rich northern populations: the virus must be kept out. Yet it is realised that a simple fortress approach may not work. John Barry points out that the 1918 pandemic probably originated in an army base in Kansas. As a senior WHO official put it:

With dense populations, large amounts of virus increases the likelihood of a pandemic. But a pandemic could start in a developed country. The Americans assume it will happen elsewhere and the job is to keep it out. But it could start there. When can we say we are prepared? Never is the answer¹⁵⁰.

¹⁵⁰ Interview, Geneva, 5 March 2008.

So, no-one is safe, anywhere. It requires a global response to an unknown threat in order to keep 'the homeland' safe. And it requires a concerted effort that goes beyond the vets and medics, and narrow professional concerns, to an emphasis on global systems that protect people and economies from huge mortalities and dramatic collapse. This is central to the pandemic preparedness narrative discussed in section 6; but it is important to go further and identify the idea of 'security' as central.

After 9/11, it is not surprising that such discourse has emerged around the potential for a pandemic. The threat of pandemic influenza is apparently graded higher than terrorist attack in the US in terms of national security (Barry 2004). Keeping the virus out of America, and dealing with it at source has been seen as a major priority by the US administration. The US state department, for example, makes the rationale for such investment absolutely clear¹⁵¹. Broader international efforts are of course linked, and the establishment of IPAPI (International Partnership on Avian and Pandemic Influenza) offered an informal inter-governmental approach to pushing agendas and coordinating funding, outside the UN system.

Much of this debate in the US presents a particular version of national security, linked to political, public and electoral concerns in the wake of 9/11 and Hurricane Katrina, not about disease control per se and certainly not about issues of poverty, equity and development. With health and foreign policy so intertwined¹⁵², and avian influenza concerns being seen as part of 'homeland security', the imperative to protect national interests often trumps global concerns in the US.

We were told:

The US has been important. It has been taken very seriously here. It's all linked with post 9/11 contingency planning, and Hurricane Katrina. There was a realisation that the country really needed to get itself organised for this sort of event¹⁵³.

In the UK, the Foresight report 'Infectious Diseases: Preparing for the Future'¹⁵⁴ spun a vivid 'Out of Africa' narrative about the threats of emerging diseases from the developing world. Interventions that then followed aimed to check this flow, and reduce this threat. Health planning around avian influenza in Europe and North America is very much seen in this vein, with Departments of Health working with civil contingency units and homeland security branches, in, for

¹⁵¹ See the January 2006 report to Congress, <http://fpc.state.gov/documents/organization/59025.pdf> as well as the main Department of State site, <http://www.state.gov/g/avianflu/>. Also see: <http://www.pandemicflu.gov>, <http://www.state.gov/g/avianflu>, <http://www.usda.gov/birdflu>, <http://www.hhs.gov>, <http://www.cdc.gov> and <http://www.usaid.gov>.

¹⁵² See discussions in: Fidler 1999, 2003, 2004; Katz and Singer 2002; Ingram 2005; Owen and Roberts 2006; Kickbusch et al 2007.

¹⁵³ Interview, New York, 10 June 2008.

¹⁵⁴ <http://www.foresight.gov.uk/OurWork/CompletedProjects/Infectious/Index.asp>; executive summary: http://www.foresight.gov.uk/Infectious%20Diseases/E1_ID_Executive_Summary.pdf

example, the US State Department or the UK's Cabinet Office¹⁵⁵. Risk registers, covering all perceived risks to health and security are compiled and reviewed at the highest level.

Discourses of security have of course intersected with concerns about health and disease for a long time. Close associations between disease control and colonial conquest have been widely discussed (cf. King 2002), as have investments by the military in research on infectious diseases, particularly relating to the tropics where troops might serve, or where source material for bioterrorism could emerge (Khardori 2006). This organisational and institutional architecture goes beyond the core public agencies discussed in the previous section. Thus, US investments in the high security foreign animal disease lab at Plum Island have largely been driven by homeland security concerns¹⁵⁶. Major conferences on bioterrorism, and no doubt extensive, but classified, policy discussions have occurred in the past years, with avian influenza being a focus for attention¹⁵⁷. With defence and homeland security spending less constrained than that for veterinary or public health, these concerns have had significant effects both on the framing of the debate and the funding of responses.

But there is not one single framing of security. Historically, different versions have been evident (Hinchliffe 2007: 105, citing Collier and Lackoff 2006). From the seventeenth century in Europe, a national security paradigm became dominant, co-constructed with the emergence of monarchical states. Such states had sovereign territory, with borders defended by military force. Such a national, state-based military security discourse has persisted, and is the basis of much thinking about state-making and international relations to the present. In the late nineteenth century, another version of security was added. This focused on the security of populations, and in particular their health. This saw the rise of public health interventions, based on new epidemiological knowledge about the spread of disease. Population security, first at the level of the nation, and later, with the advent of the WHO in 1948, at the global level, became an important strand of security discourse, often intersecting with the national-military security perspective in important ways. In more recent times, a third version has appeared, focusing on 'vital systems security'. Here the focus is less on nations or populations but more on the systems and routines that keep economies and societies ticking; and

¹⁵⁵ For the UK, see the UK Resilience site: <http://www.ukresilience.gov.uk/pandemicflu.aspx> and the link to the Civil Contingencies Secretariat of the Cabinet Office; for the US, see: <http://www.pandemicflu.gov/>

¹⁵⁶ See the 2002 Wall Street Journal article at: <http://www.ph.ucla.edu/epi/bioter/bioterrorismplumisland.html>

¹⁵⁷ In the US, the 9/11 Commission Act required a national biosurveillance system to be set up to counter bioterrorist attack. See the July 2008 report of the US Government Accountability Office, <http://www.gao.gov/new.items/d08960t.pdf>. CIDRAP has a long list of resources on bioterrorism, as well as frequent news updates and links to conferences and meetings on bioterror in which avian influenza is frequently cited, see: <http://www.cidrap.umn.edu/cidrap/content/bt/bioprep/index.html>. Also see the long list of sources on the US Environmental Protection Agency site on 'agroterror': <http://www.epa.gov/oecaagct/thom.html>

preparedness for emergencies. This has been key for much of the security and civil contingency planning around terrorism, as well as so-called natural hazards – earthquakes, floods or diseases. A whole professional discipline of disaster planning and management, now given more urgency by global climate change, has emerged focusing on making ‘vital systems’ more resilient and allowing adaptation in the face of shocks or stresses.

The avian influenza response is interesting because the different outbreak narratives which dominate mainstream policy thinking cut across these different, historically-situated versions of what is meant by ‘security’. With the emphasis on ‘homeland security’ and bioterror, an old-fashioned national security agenda is central. This is extended by thinking that emphasises global security responses across borders, and the associated slogans such as ‘responsibility to protect’ (even though these measures are essentially to protect national territories and citizens of particular nation states). As one informant put it:

The medical and defence establishments think in very similar ways. Doctors and nurses are the new army, and vaccines are the new weapons. This is a very different view of health security¹⁵⁸.

The population-based public health security discourse is clearly very evident too, and central to the WHO response – and indeed much of the argument for the veterinary response too. Classic epidemiological arguments define populations ‘at risk’, and health security aims to protect them – and protect them from affecting others. And finally, ‘vital systems’ security discourses are very prevalent, particularly in the pandemic planning narratives and the civil contingency responses that have developed.

But, because of the pliability of the term, and its high political and policy status, ‘security’ language and thinking has permeated the debate. The meanings and implications of the use of the ‘S’ word, however, are not always clear, allowing it to be captured at one moment by a national-military tone, and at others by a more benevolent population and vital systems perspective. With security so central to the wider policy discourse, this slipperiness is both understandable, but also dangerous. A quick look through documentation on avian influenza sees security associated with a range of different terms – global, homeland, national, civil, population, system, health, bio, food, human, livelihood, personal and more. Again, we need to ask: whose security, against what, for what end? This is often not clear. Funding politics may, in the end, dominate, as a version focused on ‘homeland security’ or ‘bioterror’ trumps other interpretations.

A wider debate about public health and foreign affairs is related – and, in particular, how another slippery term ‘global health governance’ is being defined (Fidler 2007 a, b). But there are perspectives on security beyond those that currently dominate.

¹⁵⁸ Interview, Geneva, 5 March 2008.

These relate more closely to the alternative narratives on avian influenza, which have also been sidelined to date, but which may offer approaches to global health governance and security that are currently not on the table. So for example, the March 2007 Oslo Declaration of Foreign Ministers from Norway, Brazil, France, Indonesia, Senegal, South Africa and Thailand identified human security as an important framing for the global health debate¹⁵⁹. A follow-up symposium identified a wider agenda for ‘health diplomacy’¹⁶⁰. Here issues of equity, poverty and development come to the fore, echoing the ‘human development’ perspective of UNDP. A wider concern with ethics and civic concerns was also highlighted in the July 2006 Bellagio statement. This emphasised issues of social justice, and more bottom up, citizen led responses, focused on basic rights¹⁶¹.

As with the disease and responses to it, there are different framings of governance – and notions of ‘security’. The international avian influenza response has adopted a variety of perspectives, often reflecting particular national political and policy interests. Thus the US response has been very much centred on ‘homeland security’ – protect ‘us’ from ‘them’ at source, going beyond national borders. The European perspective has similar elements, but given its largely continental context, with a steady flow of avian influenza virus into mainland Europe from the Balkans and beyond, there has to be a less worried tone. The actions of European member states has also shown a determined focus on effective control, along with the European Commission’s commitment to a wider developmental angle to the global response, building on the experience of responding to the tsunami¹⁶². There are other perspectives too – such as those who signed up to the Oslo Declaration – which frame governance and security more in terms of basic human needs and rights. And, as we saw in section 7, there is perhaps an emerging and assertive Asian perspective which argues that access, control and rights must be more widely shared, that having everything geared towards northern – and especially American – public anxieties, political concerns and capitalist interests is simply not equitable.

The IHR 2005, discussed in section 5, defined a new form of multilateral response to international health issues, very much framed in terms of assuring global health security. A balance between sovereign states and individual country membership of international organisations like WHO and global responsibility must be found, it argues. This means that sometimes, for the greater global good, international action is required. But, as we saw, the IHR 2005, while allowing greater scope for action

¹⁵⁹ http://www.regjeringen.no/en/dep/ud/about_mfa/Minister-of-Foreign-Affairs-Jonas-Gahr-S/Speeches-and-articles/2007/lancet.html?id=466469

¹⁶⁰ For the ‘Foreign Policy and Global Health Initiative symposium, see: <http://www.who.int/trade/symposium/en/index.html>; see also Margaret Chan, DG of WHO on health diplomacy: http://www.who.int/dg/speeches/2007/130207_norway/en/index.html

¹⁶¹ <http://www.hopkinsmedicine.org/bioethics/bellagio/index.html>. Other work, including the citizen engagement in pandemic influenza pilot project, as well as a range of reports on ethical issues from WHO, the Board on Global Health, the Institute of Medicine, the US Centers for Disease Control and others are included at: http://www.who.int/ethics/influenza_project/en/index1.html

¹⁶² Interviews, March, June 2008. http://ec.europa.eu/world/avian_influenza/index.htm

in theory based on a new vision of transparent consensus-oriented globalism, has limits in practice. What will China announce, or not; which virus samples will be shared; and can big pharma be made to play ball? These are tricky questions at the heart of the challenge for global governance, and ones that have no easy answers.

Currently there is an uneasy international consensus on global health security and its implementation, and a range of agreed legal instruments and institutions. Yet there are, within these diverse framings of 'security' which are largely dominated by the perspectives of the currently more powerful countries, attempts to recapture a more equitable, less hegemonic version, focused on human securities, ethics and rights. These again ask: Whose world? Whose health? And suggest a different shape to politics and the political economy. As the debate moves forward, and other players become more assertive, the cracks and fractures in the current consensus may become clearer, requiring deeper deliberation of what we really mean by global health governance and security.

For, we argue, the big questions about what to do and where in any international response to an emerging disease, as highlighted so vividly by avian influenza, mean that different types of governance arrangements will be required, with different framings of security. It is this recurring feature of deep uncertainty and ignorance that we want to probe in the next section. Does 'the emperor' of the international response have any clothes – or evidence-based backing for the response – and how do understandings of risk and uncertainty get dealt with by experts and others in constructing the response?

10. DOES THE EMPEROR HAVE ANY CLOTHES? RISK, UNCERTAINTY AND EXPERTISE

Central to any understanding of an epidemic is expertise. But the nature of that expertise and the authority it carries has huge consequences for the way public policy is designed. Evidence-based policy is the contemporary mantra, but what evidence is used, and what is ignored in the development of public policy? And in what ways is such knowledge and evidence framed? These are important questions, derived from a constructivist stance to science and policy. This does not mean that we are arguing for a relativist perspective where anything goes, or some type of conspiracy theory where evidence has been hidden or results somehow fiddled. But we are arguing for a more critical look at the underlying basis of constructing arguments that influence policy – the context and practice of science and policy, the framing devices used, and the way data are presented and terms used. This is of course a major study in its own right and we can only touch the surface.

However, as the previous sections have highlighted, there are huge uncertainties evident (where the likelihoods of possible outcomes are not clear), and not a little ignorance (where we don't know what we don't know). Some perspectives have not been prominent in the policy debate, while others have taken centre stage, linked with powerful people, organisations and money. Thus a study of knowledge in policy is also a study of power – and the construction of discourses and practices in particular contexts¹⁶³.

Such knowledge politics are played out in particular around major uncertainties and areas of ignorance. In the past sections, we have seen a variety of examples relating to causal mechanisms (viral change, reassortment and genetic dynamics), spread in animals (ducks, wild birds, trade), incidence (estimates of viral load, the cyclical, inter-annual and seasonal patterns, and the prevalence of 'endemic' settings), transmission (and the likelihood of human-human transmission), impact (on mortality rates of wild birds, domestic poultry and humans), and response (efficacy of bird culling, vaccination and so on in different settings).

Such uncertainties – or areas of ignorance – are of course widely recognised in the scientific and policy advice community¹⁶⁴. One informant summed it up thus:

It is difficult to deal with potentially catastrophic risk, where you cannot establish the risks... It's like having an insurance policy which cannot guarantee to pay out and there is no way of pricing the premium. This is not a traditional infectious disease problem. The normal approach of vaccine or treatment is difficult. We are talking of highly contingent risk, where it is very difficult to deal with the economics of response¹⁶⁵.

Another commented from a different perspective:

Children dying in east Turkey – of course everyone gets scared... But no one can say H5 is more likely to cause a pandemic than H7. Both are quite dangerous. In one case handled well with media; the other was an explosion. The first challenge is this, we don't know, we must be open. My personal line - I've studied virology - is not to emphasise that this virus will cause a pandemic, but we must be honest. We never know with this type of virus¹⁶⁶.

In scientific articles margins of error and coefficients of variation are of course quoted. Yet the framing of the core 'outbreak narrative' responses has been, as we have seen, around probabilistic risk – and an emphasis on prediction and control – and not a more central admission of uncertainty and ignorance. This we argue

¹⁶³ Following Foucault (1997), we can see the unfolding of the avian influenza response as a study in biopolitics and biopower, where actors and associated networks exercise power and control through processes of framing, and practices of categorisation, ordering and governmentality (cf. Rose 2006).

¹⁶⁴ Although often framed in terms of 'risk', cf. Dowdle (2006).

¹⁶⁵ Interview, London, 25 January 2008.

¹⁶⁶ Interview, Brussels, 3 March 2008.

is problematic, even dangerous. Look at virtually any policy statement or position paper on avian influenza and the well-used statistics on potential mortalities are trotted out. For effect these tend to be at the high end of the spectrum. Despite the qualifications and conditions attached, these statistics are the ones that get picked up in the media and in popular treatments – in the growing library of books, magazine articles and op-eds on the issue – as well as in ministers' briefings and policy proclamations. This is natural and not surprising. There is no conspiracy involved – and indeed they may be right. Better to be cautious and plan for the worst than use uncertainty or ignorance to do nothing: “if you accept the premise that some things are beyond the reach of science, that doesn't prevent us from taking actions”, argued one informant¹⁶⁷.

How do such framings arise? As we have seen, there have been intense political and bureaucratic pressures – with commitments from the President of the US downwards pushing the process. There has been a jockeying for position and funds in the policy debate that followed, with headline grabbing an important tactic. And there have been the workings of science advice itself within and between organisations involved in the avian influenza response. This is where, we suggest, the light needs to be shone more brightly. For in the processes on-going within the WHO, FAO, OIE, UNICEF, the World Bank and the rest, science and policy is inevitably mutually constructed. Science does not neatly feed into policy in an unproblematic and linear way, nor do politics and policy simply dominate science. There is a two-way traffic. But sometimes technical ‘truths’ are not fully questioned. One non-technical outsider commented:

The major technical premises, on which the [global] strategy was developed, were never clearly articulated or well explained. That's true for things like culling, vaccination, compensation...no one seems to ask stupid but hard questions, like why are we doing this in this way when before we were told that vaccination is no use? Or why are we culling in countries where the virus is endemic, because that hurts a whole load of small farmers and doesn't stop the infection spreading? So why are we sticking to a system that doesn't seem to make a whole lot of sense?...The lack of uniform technical advice has been a problem - especially in-country. The agencies can contradict each other. If there is a division on the technical advice it's very difficult to design projects¹⁶⁸.

The outbreak narratives we have discussed fit neatly into both the scientific and policy cultures involved. The science, as we have seen, has been dominated by a particular type of medical and veterinary perspective, reinforced by emergency and humanitarian response approaches. This emphasises disease events in particular places, and the imperative to control and eradicate. Policy then responds in particular ways that are well suited to bureaucratic routines and funding protocols. Thus the political and organisational settings for science advice and policymaking act to exclude alternative framings, focusing instead on a particular set of outbreak

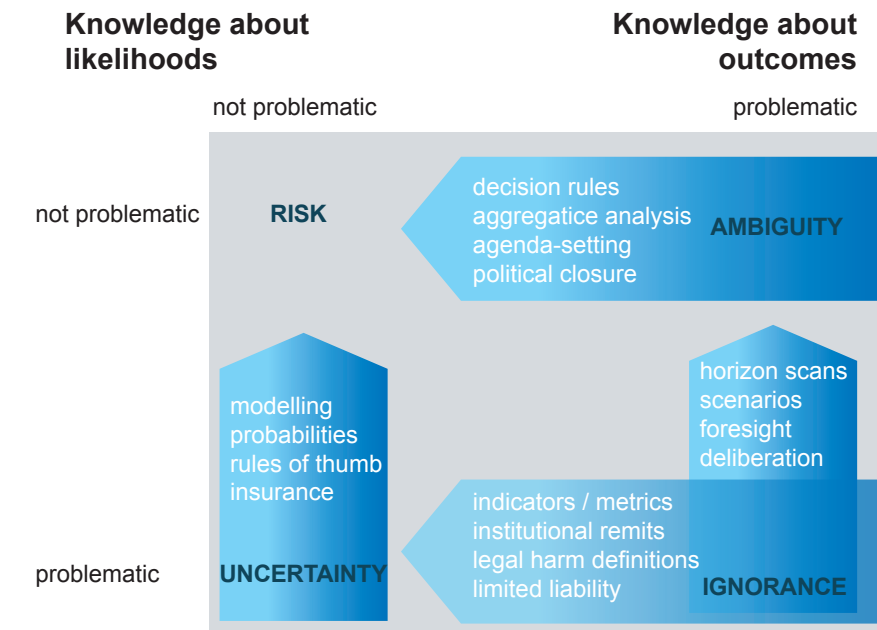
¹⁶⁷ Interview, New York, 9 June 2008.

¹⁶⁸ Interview, Washington DC, 12 June 2008.

narratives as the core response. This process of mutual construction – which, as we have emphasised before, is not necessarily ‘wrong’ – acts to black-box uncertainty and denies forms of ignorance, and other perspectives that are difficult, awkward and just don't fit. The mainstream knowledge framing is thus around ‘risk’ – something that can be measured – and the response, risk management – through surveillance, early warning systems and treatment and control strategies, where known, measured risks are minimised.

But this is only part of the story. What happens when we don't know outcomes or likelihoods? What happens when there are alternative framings of impacts and their consequences? As we have seen above, for avian influenza this is most of the time, for most situations. Here a narrow version of risk assessment is inadequate. Figure 3 offers a diagrammatic representation of this argument, distinguishing between different types of uncertainty across two axes – knowledge about likelihoods and outcomes. It also highlights (in the arrows) the cognitive, procedural and institutional pressures that influence a move towards the top left hand corner, and a focus on a narrow approach risk assessment, and away from a more plural response to different types of uncertainty; something, we argue, would be more appropriate for the avian influenza response.

Figure 3. Responses to uncertainty (from STEPS, 2008 – unpublished mimeo, originally from Andy Stirling)



Unfortunately, as we have seen, in the avian influenza response the choice of metrics and indicators, as well as institutional pressures to define 'harm' or 'liability' in particular ways, move us from an acceptance of 'ignorance' to definitions based on uncertainty, where knowledge about outcomes are deemed less problematic. In the same way, foresight exercises or scenario plans move arguments to policy assessments where knowing the likelihood of an event appears to improve, although debates persist about outcomes. In this way, scenarios, horizon scans and wider public deliberation always throw up multiple options – and so ambiguity. Which one to choose? Wider agenda-setting processes and political imperatives – for action and certainty - often force closure around particular options, often without much further evidence, moving the analysis ever further towards the top-left corner, where knowledge about likelihoods and outcomes are deemed unproblematic, and amenable to risk management. This narrow risk framing is in turn reinforced by certain types of modelling which use probability estimates (or often actually informed guesswork) to move from uncertainty to a probabilistic risk assessment mode. Again, there are institutional and procedural pressures for this move: risk maps, decision models and insurance policies require such probabilistic assessments: fuzzy, complex uncertainty or ignorance just will not do.

All these moves are reinforced by a set of disciplinary cultures which value quantitative, disease-focused assessments over more complex analyses of social, economic, political and ecological dynamics. In Rosenberg's terms, the explanations are centred on 'contamination' not 'configuration'; on outbreak events not complex disease dynamics. Understanding these disciplinary and professional biases needs to be at the heart of any analysis. A reconfiguring of disciplinary expertise and an involvement of alternative knowledges, including that of those directly affected by the disease, could, as we have suggested earlier, have a dramatic effect on the framing of the problem and the response, allowing alternative narratives into the picture. This would help to bring to the fore real uncertainties, ambiguities and forms of ignorance, and push policy to respond to these explicitly, rather than wishing such awkward, troublesome dimensions away.

However, as it stands, a fairly standard, narrow risk framing – centred on three outbreak narratives – dominates the avian influenza response. This, as we have shown, emerges from a range of institutional, procedural and cognitive pressures, and not necessarily from 'evidence' per se. Science and policy is mutually constructed in a particular context that acts to include and exclude through the exertion of power through a range of institutional and professional practices. As previous sections have discussed, the three outbreak narratives we have outlined focus on a 'risk framing' (top-left corner), with often top-down, formulaic, 'at source' interventions following from it, backed up by a variety of mechanisms that claim to predict and provide risk-based assessments of early warning. These types of response are, as we have shown, reinforced by a set of biases which lie at the heart of response systems (and the agencies that oversee them): disciplinary, procedural, administrative, bureaucratic, organisational, funding, political, and more, as well as the public policy context within which such responses are

manufactured, notably the role of the media, public trust in expert institutions and the political imperative to be seen to be doing something in an era of anxiety, worry and perceived threat.

But does this matter? Many reading this will perhaps respond – well of course, that's true, but so what? We would argue that it does matter, and that a narrow risk framing that does not effectively acknowledge issues of uncertainty and ignorance – and the ambiguity of alternative interpretations of likelihood and outcome, can act to narrow our assessment and response in ways that may undermine the effectiveness and resilience of responses.

How might this happen? For example, by focusing too much attention on (well acknowledged) inadequate information, surveillance and early warning systems, we may miss important shifts in disease ecology, and so we may be caught by surprise, with serious consequences. Alternative ways of thinking about surveillance might not have so much focus on reporting disease events and so constructing purported risk measures, but more on understanding of complex ecosystem change and holistic assessments. This may, in the end, result in better responses. Similarly, recognising the ambiguities, and inherent politics between different outcome scenarios may allow more concrete deliberation in policy circles around alternative, normative consequences for different options. In other words, asking who will be affected, where and with what implications for poverty? Such distributional questions associated with different disease responses should be seen as central to any discussion of policy, but tend to get occluded from the analysis by a universal risk framing.

In the final section we will outline some of the implications of what we define as a 'dynamics and distribution' approach to tackling the 'One World, One Health' agenda in relation to some of the key avian influenza and pandemic threat intervention pathways. This section has highlighted how expertise and framing is central to such an endeavour, and being explicit about what we do know and what we don't, and indeed being alert to the fact that we don't know what we don't know, is vital if a more resilient response system to new disease threats is to emerge. The current default of a narrow risk framing – even with all the qualifications – we argue is potentially dangerous, blanking out as it does through a range of discursive, institutional and cognitive moves important ambiguities, uncertainties and forms of ignorance.

11. ONE WORLD, ONE HEALTH? CHALLENGES AND IMPLICATIONS

The One World, One Health agenda is certainly ambitious, combining animal, human and ecosystem health in one all-encompassing approach. For some this is far too big and unwieldy, potentially undermining the successes of the focused avian influenza response by trying to put too much into the pot. As one informant put it: "It's a good catch phrase, but I am not sure what it means"¹⁶⁹. Another observed:

These concepts need to be narrow to be viable. One World, One Health is cast to cover everything. It sets the imagination off but it is more important to work out what is viable than come up with grand concepts. Avian influenza was a 'brand' if you like that could make a number of things happen. It allowed us to focus on something that was a tangible threat and source significant amounts of money from contingency funds. Talking about generic threats at the human-animal interface - zoonoses - is less arresting and makes it harder to draw funds down. The link with a possible human pandemic has focused things significantly¹⁷⁰.

For others, it is unquestionably the way forward, requiring a radical rethinking of the way we respond to international health questions. An enthusiast put it thus:

What it [the avian influenza response] has done is wake the world up to the fact that large numbers of [new human] diseases - 75% of them - come from the animal kingdom. And the connections between animal health and human health are much more apparent I would argue now, than they were five years ago. People have seen the connections with SARS, ebola. This has really accentuated that¹⁷¹.

The big danger, everyone agrees, is if this simply becomes a repackaging exercise: a desperate attempt to grab funds on the tail-end of the avian influenza bonanza by creating something that looks new. One cynic commented: "You'll probably find that it was at one time called veterinary public health; it is in fact nothing new"¹⁷². The incentives for the default option are large. There are vested interests in what has become a status quo – well funded avian influenza programmes, propping up large groups of staff on short-term contracts, and mini-empires which have pushed certain departments and individuals into prominence. And many argue, with some justification as we have seen, that the avian influenza response has been successful and offers a good model for rolling out similar approaches to respond to a wider set of potential disease threats.

¹⁶⁹ Interview, New York, 9 June 2008.

¹⁷⁰ Interview, New York, 10 June 2008.

¹⁷¹ Interview, Washington DC, 11 June 2008.

¹⁷² Interview, Washington DC, 13 June 2008.

We argue, however, that if the 'One World, One Health' agenda is to have any traction, it must not simply be old wine in new bottles, no matter how enticing the prospect of new cash for activities that are fast running out of funding might be. Despite the tangible successes of the recent international response to avian influenza, we believe there are some important lessons that have been learned that require some fairly important shifts. In particular, by questioning the dominance (but not the importance or the relevance) of the three 'outbreak narratives', we argue for an opening up of the overall framing to encompass the three alternative narratives – on veterinary and animal health issues, on human public health and on pandemic preparedness – discussed in section 6. This then requires new perspectives on appropriate organisational architectures, the understanding of 'security' and responses to uncertainty and ignorance, as sections 8 to 10 have argued.

Here we identify ten challenges for the way ahead derived from our analysis. Again it should be emphasised that, by arguing for change, in most instances we are not arguing against existing approaches, but arguing for additions, extensions and nuances.

MANAGING ENDEMIC SITUATIONS

As sections 4 and 5 highlighted, much of the current veterinary and public health response is framed by a strong 'outbreak' narrative that emphasises the disease event and the diseased area. A response strategy follows that focuses on disease eradication. This is clearly desirable, and an emergency/crisis response is of course appropriate in many areas. But in other places it is not: the 'model' response is not appropriate in all contexts. And these areas may be significantly larger and more important – for overall global disease dynamics – than originally thought. In areas where the disease is heavily entrenched, and effectively endemic, a different approach may be needed. This focuses on long-term prevention and managing endemism, rather than emphasising eradication pathways which may either be impossible or, worse, result in more rather than less disease because of the consequences of intervention measures.

EMBRACING UNCERTAINTY

As discussed in section 10, there are a variety of factors embedded in the current response that result in the black-boxing or ignoring of uncertainty and ignorance, and the denial of ambivalence (or alternative perspectives). These are reinforced by institutional practices and the nature of expertise. But a simple risk framing – and risk management response – may not be enough. An approach that embraces uncertainty (and ignorance and ambivalence) may result in more effective and resilient response strategies. But this requires new forms of expertise, a more open approach to assessing evidence and designing responses, and new methods and practices to allow this to happen. This is a theme that cuts across all other areas, with profound consequences.

RETHINKING SURVEILLANCE

The 'outbreak' focus discussed above lends itself to a particular type of surveillance emphasising tracking disease events. This is essential and represents the basis of significant and important investment over recent years. But this, we argue, needs to be complemented by 'systemic surveillance' that looks at the dynamics of changing diseases and ecosystems, identifying triggers, dynamic shifts and potential new equilibria, as a range of variables in non-linear systems interact. Clearly this is a much more difficult task and would need a combination of broad ecosystem assessment with modelling work, and – critically – locally based information systems which pick up on local understandings of dynamic change. Surprise will always be present, but understanding complex dynamics may help us prepare for it in ways that are more comprehensive than often after-the-event disease tracking.

A FOCUS ON ETHICS, EQUITY AND ACCESS

Much of the current debate has been framed in universal, global terms: this is a global threat requiring a global response. The One World, One Health banner can be seen in these terms too. But just beneath the surface – and occasionally popping above it to disturb the neat global consensus – are issues of equity and access. Choices of what to do, where and for whom (whose world, whose health?), inevitably frame and direct the pathways of response. If dominated, as to date, with largely northern concerns about 'health security', then a response pathway will emerge in a particular way (around the outbreak narratives we have discussed). But with other framings – say around poverty, equity and access – then a different response pathway will be more likely. Across this report, and reflecting the views of a number of many we discussed with, we have identified a more developmental focus as key for any future agenda. This emphasises not just 'global' health security and governance in a bland, universalist sense, where the politics of access and the structural inequalities inherent are obscured, but an agenda where this political economy is very much more central. This will require an explicit analysis of the social distribution of risks and rewards, as well as new voices at the table, resulting in a more inclusive approach to agenda setting. It will allow some agencies at the heart of the response – and in particular the FAO and WHO – to recapture some of their core mandates, and focus attention more explicitly on these issues.

A NEW PERSPECTIVE ON HEALTH SECURITY

This relates to a wider debate about the meanings and interpretations of 'health security' and 'health governance'. As discussed, these have come to mean certain things, excluding other perspectives. This has happened almost by default through the unfolding of the policy process and the capture of the agenda by particular interests and perspectives. The global consensus – some would say fudge – has avoided debating these sensitive and highly charged topics, particularly as the

major funders of the international response have very strong views. Unless a more thorough debate is conducted, this consensus will remain fragile and subject to disturbance. Alternative perspectives on security, particularly at the global level, need to be engaged with, including those developed under the auspices of the Oslo Declaration. A different vision of the relationship between health and foreign affairs may yet emerge, which the One World, One Health initiative could be a good vehicle for. This may offer a reinvention of the concepts of health security and health governance in ways that are less framed by post-9/11 concerns with national security, and consider a more holistic, development-oriented vision.

RETHINKING GLOBAL GOVERNANCE AND ACCOUNTABILITIES

As we have seen, there is much talk about global governance set within assumptions of consensus, transparency and common vision. This universalist globalism is present in much of the discussion of the avian influenza response, yet often excludes difficult politics and competing interests, resulting in a rather anodyne version, largely unreflective of wider political processes. This global governance vision is enacted through grand mission statements and the instruments of multilateralism, but often comes unstuck when such perspectives are not in the interests of particular powerful worlds. Whether we live in a uni-polar world, one of new empires (Hardt and Negri 2000), a multi-polar one of diverse emergent powers (Huntington 1999), or a non-polar world where no-one has much influence anymore (Haass 2008) is a matter for much debate, and one that matters for how global responses to emerging threats such as new diseases are constructed. Assuming simple, universal, global consensus will get us nowhere, as policy regimes and instruments become either captured or obstructed. Thus, at the centre of any debate about ways forward, must be a searching – and politically-informed – look at the new configuration of power and interests globally, and the way that this affects our understandings of governance.

Questions of who is accountable for what and to whom have been raised throughout this paper. This has often not been clear in the international response to date. Financial accountability has been assured through the regular reporting and monitoring by the World Bank, in relation to World Bank managed trust funds. UNSIC too has provided rigour, but the reporting and accountability relations to other organisations has often not been clear. And within agencies, systems exist for managing funds, controlling programmes and defining what is done too. But nearly all the accountability mechanisms identified refer to aid funds, and financial accounting systems. This is clearly important, given the huge amounts of money being spent, and such systems of upward accountability to donors has ensured that money has been accurately accounted for. But this misses out on other forms of auditing – both horizontal across organisations and downward to those people who the effort is supposed to be serving. In an international response with so many strands, this may be a tall order, but if 'global' only means accountability upwards to international donors, it then is little surprise that the effort becomes framed in

these terms. Getting a wider stakeholder group involved, beyond the formulaic and ritualised efforts of international ministerial meetings, must be a key challenge for any future efforts.

NEW ORGANISATIONAL ARRANGEMENTS

Sections 8 and 10 highlighted how developing organisational arrangements - and disciplinary, bureaucratic and other procedures - that can embrace surprise, deal with uncertainty and accept ignorance, as well as being more inclusive of diverse sources of knowledge and innovation, are essential. With the challenges stretching across ecosystem management, veterinary/animal production issues and human health and disease, some quite radical new configurations and incentive systems (if not organisations) will be required. For the UN, and international public system more generally, this will be a challenge. UN reform has been highlighted as an urgent requirement for decades. But perhaps this will be an important opportunity, revisiting mandates and capacities and revitalising the core UN agencies at the centre of any international disease response in ways that do not entrench existing interests, but allow more cross-agency working, flexibility and responsiveness. The avian influenza response has demonstrated some important successes in this regard, and the coordinating group, UNSIC, has in many respects offered an exemplary light-touch approach to facilitation, coordination and profile/fund raising across – and outside – the UN system. Caveats of course apply, and the danger of ‘mission creep’ and ‘institutional fossilisation’ are always present, but the metaphor of a ‘movement’, an alliance of creative and like-minded people pushing an agenda is one that perhaps should be maintained.

DISCIPLINARY AND PROFESSIONAL MIXES

As we have seen, the core international response has been dominated by a relatively narrow disciplinary and professional group – mostly vets and medics, and a few communications specialists. There have been others too of course, but largely on the margins. This has been seen as a fairly technical problem requiring a technical solution, and one framed by an ‘outbreak narrative’, where a disciplinary focus on ‘contamination’ (and eradication) trumps other ‘configurational’ perspectives, where livelihood contexts, dynamic ecologies and political economy become more important. The work by technical specialists focusing on the outbreak is clearly vital, and particularly revealing as understanding of molecular composition and genome dynamics increases¹⁷³. But, as previous parts of this report have shown, these perspectives may narrow the analysis, and so constrain prognoses and recommendations. We would argue that the issues highlighted above – and widely recognised as important by nearly every informant we discussed with – require broader disciplinary and professional frames, and particularly more emphasis on

¹⁷³ See, for example, Hatta et al (2001); Lee et al (2004).

the social sciences as a route to understanding the contextual factors that influence disease dynamics and the effectiveness of different types of response. It was a surprise to us that, within the core agencies involved in the international response, there seemed to be such a limited array of expertise (and this is not just special pleading from authors who trained as an ecologist and psychologist and work on the social science of science-policy interactions!) But beyond extending the contributions of formal expertise, we would argue that another important challenge will be to democratise expertise, and extend the contributions of others, beyond the professions and outside the technical agencies and the academe, to people who are living with and managing diseases on a day-to-day basis. Exposing scientific and policy claims to a wide range of critique from diverse sources enhances scientific rigour and policy robustness. For, it is the strategies and cultural logics of people in disease-affected areas which must, in the end, ensure that disease control is effective. This will require a substantial shift in professional and organisational cultures, as current approaches often actively exclude and often dismiss such alternative forms of knowledge and expertise.

IMPROVING PROGRAMME DESIGN AND IMPLEMENTATION

As discussed in the rest of the paper, there have been many good investments as part of the international avian influenza response, with long term capacities improved in a range of areas, and with emergency preparedness, at least in some quarters, substantially enhanced. However, all admit there have also been gaps and inadequacies. There are also questions of opportunity costs: could the money have been spent on something else? Are there other more pressing priorities that have missed out? The country studies that are being conducted as part of the wider study¹⁷⁴ are revealing the complexity of programme design and implementation in particular places in South East Asia, as well as the wider politics of resource allocation at a national level. Bigger questions are being raised about aid effectiveness in areas where there is weak state capacity and high levels of corruption. Competition over aid resources can create highly distorting effects, and the desired cooperation and collaboration across government departments, the private sector, NGOs and civil society simply does not happen. Despite the increasing coherence and integration at the international level, at the country level barriers and divides generally remain as present as ever. The traditional vertical programme approach for sectoral interventions remains the preferred model. This attracts resources, and may generate rents. A cross-sectoral or sector-wide approach has proved less enticing, and much of the effort on the ground has remained fragmented and duplicative. For this reason, a more targeted approach to programming is needed, taking in a cross-sectoral approach and attuned to local circumstance and particular local political and policy contexts. There has been a tendency for a one-size-fits-all approach, where global expertise defines strategies towards disease control or public education and communication. These

¹⁷⁴ See www.steps-centre.org/ourresearch/avianflu.html.

simple approaches have often not worked well, and have to be adapted in ad hoc ways. Making a feature of an adaptive and responsive approach up-front makes more sense. This accepts the principles of subsidiarity, decentralised control in design and implementation to the lowest level appropriate. This encourages a more participative approach to programme design, avoiding the worst problems of a technical, top-down, vertical programming approach.

ASSESSING SUCCESS AND IMPACT

Central to any endeavour is having a vision of success – and with this some indicators of impact. Such visions and indicators of course follow on directly from the narratives at the centre of any policy response. Thus for the outbreak narratives that dominate the international avian influenza response, the vision is firmly one which centres on disease control, eradication, the prevention of avian outbreaks and so the prevention of a human pandemic. Indicators follow, focused on disease events and incidence. But such a narrative of course, as discussed, misses out on other alternative perspectives, focused on complex disease dynamics, poverty impacts, equity and access. These suggest very different indicators and measures of success or impact. In sum, there is very little clarity about what success is (beyond the obvious need to avoid a major human pandemic), and in practice success is often measured in terms of financial disbursement and completion of project activities. We suggest that there is an urgent need for a more thorough and on-going debate about ‘theories of change’ (or narratives in the language of this report) and indicators that are meaningful.

As an outline for an agenda for action for the One World, One Health initiative, Table 1 provides a summary of the above discussion, highlighting ten areas for action which, we suggest, need to be addressed if the initiative is to really improve the world’s ability to respond to future, uncertain zoonotic disease threats in ways that are effective, equitable and resilient.

Table 1. Ten lessons from the international avian influenza response: challenges for the One World, One Health agenda

THEME	FOCUS FOR THE HPAI RESPONSE	CHALLENGES FOR THE ONE WORLD, ONE HEALTH AGENDA
Outbreaks and endemism	Outbreak: disease events and diseased areas	More emphasis on dynamic drivers for emerging diseases and endemic contexts
Risk and uncertainty	Risk – and risk management	The implications of uncertainty, ignorance and ambiguity need attention
Surveillance and information	Disease incidence and outbreak tracking	More focus on underlying dynamics of change, across a range of factors to identify likely ‘hot spots’ and emergent diseases
Ethics, equity and access	Ethical, distributional and access issues not central	Questions of equity and who gets access vital, asking whose world, whose health?
Health security	A protectionist, national security stance	A more inclusive, rights-based human security vision
Global governance and accountabilities	A universalist, consensual globalism, with upward accountabilities to donors (largely)	A more politically realistic perspective on governance, recognising different interests and agendas, alongside a more inclusive form of downward accountability
Organisational arrangements	Lead technical agencies with defined mandates, backed up with an efficient funding mechanism and light-touch coordination	Building on the model, aiming for ‘optimal redundancy’ without too much overlap and avoiding forced integration, but maintaining a nimble, flexible coordination ‘movement’
Disciplines and professions	Veterinary and health professionals dominate	Need for more ecologists, epidemiologists, economists and social scientists, including anthropologists, sociologists and political scientists. And ‘non-professionalised’ local experts
Programme design and implementation	Standard designs and blueprints based on core narratives, with local ad hoc adaptation in the field	Accepting flexible design and adaptation from the start, based on the principles of subsidiarity and participation
Success and impact	Success and impact indicators based on core narratives (theories of change). In practice, mostly focused on activities and disbursement	Widening the scope requires widening the visions of success, leading to a need to invest effort in defining, in an inclusive way, success and impact indicators more imaginatively

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Appendix 1: Avian influenza timelines – biology and policy, 1997-2007¹⁷⁵

DISEASE BIOLOGY	POLICY RESPONSES
1997	
<i>May – December</i> ◆ H5N1 avian flu infects 18 people in Hong Kong, and six die.	◆ Hong Kong's entire chicken population is slaughtered.
2003	
<i>February</i> ◆ H5N1 reappears in Hong Kong. ◆ H7N7 virus causes outbreak in chickens in The Netherlands. <i>December</i> ◆ South Korea has its first outbreak of avian influenza in chickens, caused by H5N1.	
2004	
<i>January</i> ◆ Japan has H5N1 outbreak in chickens. ◆ Vietnam's first human H5N1 cases. <i>February</i> ◆ Indonesia first reports H5N1 in poultry in 11 provinces. Vaccination is allowed. <i>April</i> ◆ Avian influenza virus H7N3 confirmed in two poultry workers in British Columbia. <i>August</i> ◆ In Vietnam and Thailand, H5N1 has infected at least 37 people, with 26 deaths. <i>September</i> ◆ A mother who died after caring for her sick daughter is the first suspected case of person-to-person transmission of H5N1 avian flu in Thailand.	<i>February</i> ◆ United Nations FAO advises governments in affected areas that mass culling of birds is failing to halt the disease and that vaccination of targeted poultry flocks is required as well. <i>May</i> ◆ FAO and OIE sign The Global Framework of the Progressive Control of Transboundary Animal Diseases. <i>November</i> ◆ WHO warns that the H5N1 bird flu virus might spark a flu pandemic that could kill millions of people, and is concerned that "much of the world is unprepared for a pandemic". ◆ WHO officials meet with vaccine makers, public-health experts and government representatives in a bid to speed up the production of flu vaccines to avert a global pandemic
2005	
<i>January</i> ◆ Rising numbers of cases in Vietnam and Thailand.	<i>March</i> ◆ WHO releases its preparedness plan for the control of an influenza pandemic at the national level.

DISEASE BIOLOGY	POLICY RESPONSES
<i>February</i> ◆ First report of a human bird flu case in Cambodia. ◆ Probable person to person transmission of bird flu in Vietnam is reported. <i>May</i> ◆ Rumours of human deaths in China from H5N1 remain unconfirmed. ◆ WHO reports 97 cases and 53 deaths from bird flu in Vietnam, Cambodia and Thailand since January 2004. <i>June</i> ◆ A farmer becomes Indonesia's first human case of avian flu caused by the H5N1 virus. <i>July</i> ◆ The Philippines, so far the only Asian country unaffected by bird flu, report their first case in a town north of the capital, Manila, but do not confirm whether it is the H5N1 strain. <i>October</i> ◆ Thailand's first human H5N1 case since October 2004. ◆ Indonesia has so far had seven confirmed and two probable human cases of H5N1 avian flu, with an additional 80 or so cases suspected. <i>November</i> ◆ China confirms three human cases of bird flu and investigates the possibility of human-to-human transmission. ◆ A newly confirmed fatal case in Viet Nam coincides with a recurrence of outbreaks in poultry. Viet Nam has reported 66 cases (22 fatal) since December 2004. <i>December</i> ◆ Newly confirmed human cases of H5N1 avian flu bring the total number in Indonesia to 16. Of these cases, 11 were fatal.	◆ The EC and WHO organise a meeting in Luxembourg with representatives from the 52 countries of the WHO European Region. <i>May</i> ◆ FAO, OIE and WHO publish 'A Global Strategy for the Progressive Control of Highly Pathogenic Avian Influenza'. <i>July</i> ◆ At the end of a three-day conference in Malaysia, WHO officials announce that \$150 million is needed to fight the spread of the disease in people and another \$100 million to stop its spread in animals in Asia. <i>August</i> ◆ WHO recommends that regional offices stockpile drugs against bird flu: a 5-day course of Oseltamivir (Tamiflu) for 30% of workers and their families. <i>September</i> ◆ President Bush calls for an international partnership that would require countries facing an influenza outbreak to share information and samples with the WHO. <i>October</i> ◆ The Government of Canada hosts an international meeting of Health Ministers to enhance global planning and collaboration on pandemic influenza. Delegations from 30 countries and representatives from nine international organizations attend. ◆ WHO reiterates that the level of pandemic alert remains unchanged at phase 3: a virus new to humans is causing infections, but does not spread easily from one person to another. <i>November</i> ◆ President Bush announces that he will bid for \$7.1 billion in emergency funding from US Congress to prepare for a possible bird flu pandemic, including purchasing of vaccines and drugs, development of new technology, and overseas aid.

DISEASE BIOLOGY	POLICY RESPONSES
2005	
	<p>November</p> <ul style="list-style-type: none"> ◆ WHO, FAO, OIE and the World Bank co-sponsor a meeting on avian and human pandemic influenza at WHO headquarters, Geneva.
2006	
<p>January</p> <ul style="list-style-type: none"> ◆ First reports of human H5N1 cases in Iraq and Turkey - confirmation that H5N1 has moved beyond Asia. <p>March</p> <ul style="list-style-type: none"> ◆ The first human cases of H5N1 avian flu occur in Egypt and Azerbaijan. In Azerbaijan, six cases appear to be due to contact with wild birds. The virus appears to be a distinct lineage to that currently circulating in east Asia. <p>April</p> <ul style="list-style-type: none"> ◆ China has now reported 16 human cases of H5N1 infection, 11 of them fatal. <p>May</p> <ul style="list-style-type: none"> ◆ First human case of H5N1 avian flu in Djibouti. ◆ A cluster of cases occur in Indonesia, killing seven of eight infected people, and is the first in which the WHO admits that human-to-human transmission is the most likely cause of spread. <p>June</p> <ul style="list-style-type: none"> ◆ Hungary reports its first H5N1 in poultry (previously reported in wild birds). ◆ Ukraine reports H5N1 in poultry (first report since February 2006), first reported in wild birds in May 2006. ◆ Spain first reports H5N1 in a single wild shore bird in northern region. <p>August</p> <ul style="list-style-type: none"> ◆ Viet Nam reports H5N1 in unvaccinated duck flocks and market ducks on routine surveillance. Ducks did not show clinical signs. (First report since December 2005). 	<p>January</p> <ul style="list-style-type: none"> ◆ At the International Pledging Conference in Beijing, co-hosted by the Chinese government, the EC and the World Bank, donor countries and international health organizations pledge \$1.9 billion to fight avian influenza and prepare for a pandemic. ◆ Japan-WHO joint meeting on early response to Potential Influenza Pandemic. <p>March</p> <ul style="list-style-type: none"> ◆ WHO releases a draft containment plan containing guidelines for national authorities, as well as for launching a full-blown efforts including quarantine, closing of schools, churches, public transport and borders, and the large-scale distribution of antivirals. <p>April</p> <ul style="list-style-type: none"> ◆ OFFLU, the network on avian influenza of the OIE FAO, agrees to make public material on outbreaks in animals. <p>June</p> <ul style="list-style-type: none"> ◆ Vienna Senior Officials meeting on Avian and Human Pandemic Influenza organized by the Austrian Presidency of the EU, in coordination with the Commission, the USA and China. <p>July</p> <ul style="list-style-type: none"> ◆ At the G8 summit in St. Petersburg, Russia, rich countries call for improved infectious disease surveillance through: "better coordination between the animal and human health communities, building laboratory capacities, and full transparency by all nations in sharing, on a timely basis, virus samples."

DISEASE BIOLOGY	POLICY RESPONSES
<p>September</p> <ul style="list-style-type: none"> ◆ Thailand confirms its 25th human case, in a 59-year-old man from Nong Bua Lam Phu Province in Northeastern Thailand (onset date 14 July 2006). <p>November</p> <ul style="list-style-type: none"> ◆ Republic of Korea reports H5N1 in poultry (first since September 2004). Outbreaks continue to be reported. ◆ Indonesia confirms its 73rd human case in a 35-year-old woman from Banten and its 74th human case, in a 30 month old boy from West Java. <p>December</p> <ul style="list-style-type: none"> ◆ Egypt confirms its 16th, 17th, and 18th human cases in an extended family in Gharbiyah. 	<p>August</p> <ul style="list-style-type: none"> ◆ The Indonesian government and the US Centers for Disease Control and Prevention announce that they will share all flu data. ◆ Leading flu researchers sign up to the Global Initiative on Sharing Avian Influenza Data (GISAID) under which countries and scientists agree to immediately share pre-publication samples and data. <p>October</p> <ul style="list-style-type: none"> ◆ The WHO calls for a boost in influenza vaccine manufacturing capacity and use of new technologies to produce more potent and effective vaccines, as outlined in new guidelines: The global pandemic Influenza action plan to increase vaccine supply. ◆ New FAO Crisis Management Centre (CMC) inaugurated to fight Avian Influenza outbreaks and other major animal health or food health-related emergencies. <p>December</p> <ul style="list-style-type: none"> ◆ US\$475 million pledged at the end of a major three-day international inter-ministerial conference in Bamako, Mali.
2007	
<p>February</p> <ul style="list-style-type: none"> ◆ Lao PDR reports its first human case of H5N1 avian flu, and the second in March. <p>March</p> <ul style="list-style-type: none"> ◆ According to the WHO, the total number of H5N1 cases since the initial south east Asia outbreaks in 2003 has reached 281, with 169 deaths. Indonesia, currently the only country to report cases in 2007, has had a total of 81 confirmed human cases, 63 of which were fatal. Vietnam, which saw the highest country incidence of 93 cases (42 deaths) up to 2005, has reported no new human cases for over a year. 	<p>March</p> <ul style="list-style-type: none"> ◆ The US government approves Sanofi-Pasteur's vaccine against H5N1 bird flu, even though it is only partially effective. The US Food and Drug Administration releases its Influenza Pandemic Preparedness Plan. <p>April</p> <ul style="list-style-type: none"> ◆ WHO awards grants to 6 developing countries to produce influenza vaccines. The awards will fund the establishment of facilities to manufacture routine seasonal flu vaccines which can then be used to produce avian flu vaccines if a pandemic occurs.

DISEASE BIOLOGY	POLICY RESPONSES
2007	
<p>March ◆ Bangladesh first reports H5N1 in poultry.</p> <p>April ◆ Egypt continues to have the highest number of infections and fatalities from avian flu outside Asia, with 34 cases, and 14 deaths.</p> <p>June ◆ Indonesia reports its 101st case of avian flu.</p> <p>September ◆ Number of human cases of H5N1 avian flu rises to 200 globally.</p> <p>November ◆ UK reports H5N1 in a flock of free-range turkeys in England (first since January 2007).</p> <p>December ◆ Poland reports H5N1 in young turkeys in Mazowieckie (first outbreak ever in poultry, last H5N1 report in a wild swan in May 2006). ◆ Egypt retrospectively reports 579 outbreaks of H5N1 in birds from 23 March 2006 through 24 November 2007. ◆ Pakistan informs WHO of 8 people in the North West Frontier Province that have tested positive for H5N1. These are the first suspected human cases ever reported in Pakistan.</p>	<p>May ◆ WHO approves a resolution to stockpile vaccines for H5N1 and other influenza viruses of pandemic potential and to establish guidelines for their fair and equitable distribution at affordable prices. The resolution also calls for new terms of reference for the sharing of flu viruses by WHO collaborating centres and reference laboratories.</p> <p>June ◆ WHO's International Health Regulations take effect from 15 June. Member states are now legally obliged to respond and provide technical assistance for the containing, at source, any health threat of international concern, with emphasis on smallpox, polio, SARS, and novel flu strains, including H5N1. ◆ Rome - International Technical Meeting on Highly Pathogenic Avian Influenza and Human H5N1 Infection.</p> <p>December ◆ The New Delhi International Ministerial Conference on Avian Influenza proposes 'One Word One Health' theme.</p>

¹⁷⁵ This appendix has been compiled from timelines, chronologies and new reports from the following sources:
 EC: http://ec.europa.eu/food/animal/diseases/controlmeasures/avian/h5n1_chronology_en.htm
 FAO: <http://www.fao.org/avianflu/en/index.html>
 Nature: <http://www.nature.com/nature/focus/avianflu/timeline.html>
 WHO: http://www.who.int/csr/disease/avian_influenza/ai_timeline/en/index.html

Appendix 2: Informants (interviews/discussion, January – June 2008)

<p>Joe Agnelli USDA Christina Amaral FAO Iain Bald UNOCHA (PIC) Michelle Barrett UNSIC Peter Bazeley Consultant Brian Bedard World Bank Allan Bell UNOCHA (PIC) Ekin Birol IFPRI Gerry Bloom IDS Sigfrido Burgos FAO Christianne Brusckhe OIE Ketan Chitnis UNICEF Ian Clarke UNOCHA (PIC) Simon Cubley UNSIC Jose Diaz USDA Joseph Domenech FAO Sarah Dry STEPS Jeevanandhan Duraisamy FAO Ellen Funch UNSIC Megan Gilgan UNICEF Paul Gully WHO David Heymann WHO Janthomas Hiemstra UNDP Olga Jonas World Bank Margaret Jones US State Department Samuel Jutzi FAO Masayo Kondo UNOCHA (PIC) Alberto Laddomada DG SANCO, European Commission Ambassador John Lange US State Department David Leonard IDS Tim Leyland DFID Anni Mcleod FAO Angela Merianos WHO Piers Merrick World Bank</p>	<p>John Millett DFID Marianne Muller WHO Elizabeth Mumford WHO Flore Murard FAO David Nabarro UNSIC Joachim Otte FAO Richard Pacer USDA Julio Pinto FAO Maria Pittman DG SANCO, European Commission Karl Rich ILRI Sylvia Robles World Bank Stephane de la Rocque FAO Basil Rodrigues UNICEF Micah Rosenblum USDA Cornelius Schmaltz DG Research, European Commission Sari Setiogi WHO Daniel Shallon FAO Jan Slingenbergh FAO Andrew Sobey FAO Libuse Soukupora EuropeAid Co-operation, European Commission Henning Steinfeld FAO Nicholas Studzinski US State Department Gavin Thomson, Pretoria Kaat Vandemaele WHO Alain Vandersmissen & colleagues DG External Relations, European Commission Ron Waldman USAID Ousmane Watt UNOCHA (PIC) Tomme Young FAO legal consultant Pauline Zwaans World Bank</p>
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