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Framing disease: The avian influenza pandemic in Australia

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ABSTRACT

Since 2003, avian influenza has recently spread around the world sparking fears of a potential pandemic. As a result of this, a range of explanations and expectations surrounding the phenomenon were generated. Such social representations of disease depict the issue under discussion and frame reactions to the event. This paper explores the social representations surrounding avian influenza in Australia. Methodologically, a textual analysis of media and government documents was conducted in order to uncover the social representations implicit in these accounts. This demonstrated a symbolic framing of avian influenza with reference to the Spanish Influenza pandemic (1918). Analytically, the study draws upon the concepts of social representations from Durkheim and of risk and symbolic risk in the work of Beck. Overall, it is argued that the framing of avian influenza as a risk, mediated through the collective memory of Spanish Influenza, characterised the nature of the social representations surrounding the phenomenon. This resulted in the production of symbolic solutions to the threat.

Keywords: sociology; avian influenza; social representations; risk; media; infectious disease

Introduction

The threats of new infectious disease – SARS or avian influenza – as impending pandemics have recently come into prominence in the public domain. In this paper we provide an account of how avian influenza was framed in Australian media and government sources. Drawing upon Durkheim's concept of social representations, this paper explores the construction of avian influenza as produced through the public narratives of the government and the media (Nerlich and Halliday 2007). Methodologically, narrative analysis was utilised to uncover the discourses implicit in the media and government documents. The study demonstrates an historical continuity in the construction of epidemics in Australian society through the linking of avian influenza with the Spanish Influenza pandemic of 1918. As the media and government documents studied in this paper demonstrate, the social representations of infectious disease resonate deeply in the collective understanding of these issues and have led to the rise of risk discourses in regard to an avian influenza pandemic, resulting in a heightening of uncertainty and fear surrounding this perceived threat.

This paper shows how the symbolic construction of pandemic threats based on the collective memory of the Spanish Influenza, as demonstrated in newspaper and government reports, results in the pursuit of an antiviral defence against the influenza, even when it is known that such a strategy will not be effective. As we will show, the Australian Government's position represents

a symbolic solution to what is fundamentally a symbolic issue.

Representations are a ubiquitous and necessary component of social life, since they both produce a shared understanding and help individuals to make sense of the world around them. As such, social representations generate a collection of explanations and expectations surrounding a given phenomenon. Importantly, such representations both depict the issue under discussion and simultaneously reflect subjectivities surrounding that issue (Durkheim 1915; Meštrović 1988). The study of social representations is thus necessarily of sociological interest because representations give insight into both the perception and construction of a given phenomenon under study (Moscovici 1988).

The production of public representations is most relevant in circumstances where a framework of interpretations is essential to render interpretable a challenging or unfamiliar occurrence, such as the event of illness (Rosenberg 1989). The experience of disease essentially reflects a break in the ordinary continuity of social life (Herzlich and Pierret 1987), and narratives of disease thus become necessary to render this disruptive experience intelligible. Furthermore, such narratives not only provide an explanation for the specific event but also necessarily supply some interpretation regarding the overall nature of society and social reality. Representations of disease are thus an important subject of sociological study. In this paper, the construction of disease representations is explored through the analysis of the depictions that surround the phenomenon of avian influenza.

What is commonly referred to as 'avian influenza' in the public domain is actually a specific and highly pathogenic subtype of the avian H5N1 virus (Monto 2005). The potential impact of this virus has recently become entrenched in the public consciousness due to characterisations of its ability to cause a human pandemic. Though the H5N1 virus predominantly affects birds (and even then only infrequently in a highly pathogenic form) sporadic human epidemics caused by various avian influenza viruses have developed throughout history. Human infections by H5N1 in Hong Kong (1997), and subsequent cases in various areas globally, sparked the generation of a heightened perception of the threat posed by this virus (Monto 2005). Thus, although there had been relatively few instances (just over 300 laboratory-confirmed cases) of human infection worldwide (WHO 2008) the risk of a global pandemic of avian influenza had been a possibility that was often reiterated in the discourse of various social institutions during the height of the scare.

Risk, risk communication and symbolic industries of risk

Sociologically speaking, there are a number of factors that make up the constitution of a risk. Firstly, for a risk to exist it must first be acknowledged; it must exist in the political consciousness (Douglas 1992). Apart from this characteristic as a constructed and essentially public entity, risks also display several other features. These include the necessarily systemic nature of risks (Beck 1992:21–32). Although they are unequally distributed, risks also tend to cross temporal and spatial boundaries and are characteristically located in the future. The AI pandemic threat possesses these characteristics. Thus, as will be seen in the following analysis, an important feature of risk is the concept of anticipation. As such, although the perception of risk surrounding AI lay in the future, this fact enhances, not diminishes, the sense of dread. Furthermore, unlike the hazards of early industrialisation, no individual or organisation can be held directly responsible for the current risks, as risks are inherent in the social system itself. Additionally, according to Beck's characterisation, while hazards of the past were largely perceptible to the senses, risks of the present (such as AI) generally remain invisible. Therefore,

knowledge surrounding risks is localised in the sphere of science, since risk assessment is necessarily based upon causal interpretation. In this way, this knowledge is easily subject to different interpretations and is thereby open to social definition and construction.

Thus, while science is responsible for the primary production of risk perception, the invisible and subjective nature of a risk also permits interpretation from other sources (Beck 1992:29). Notably, the media holds a key social and political position in defining risk and communicating risks, especially when scientific uncertainty exists. In such cases, notions of threat are highly susceptible to non-technical definition and construction (van Loon 2002). As the social and economic importance of ideation regarding a risk grows, so too does the power of the mass media as agents of the dissemination of risk narratives. Thus, the way in which the AI risk is presented by the media is crucial to the understanding of the phenomenon as a whole. Here it will be shown that media reporting of AI serves to heighten expectations of pandemic and perpetuate the perception of risk. The very existence of a large number of newspaper reports on the issue of AI reinforces the suggestion that the media helps to (re)produce notions of AI as an issue of primary public interest. This thereby affects government reactions to the AI risk, and government measures and media discourses interrelate with each other in a reflexive manner.

Proposing solutions to AI is problematic because of the different interpretations of the level of risk it poses. But once a risk is generated a solution has to be proposed. In Australia that solution is found in the stock piling of antiviral drugs. Given the lack of consensus regarding the validity of these measures, the government response to the AI threat in terms of vaccine and antiviral stockpiling appears problematic. However, one way in which this phenomenon can be explained is through the use of Beck's concept of the rise of symbolic industries surrounding risk. Beck argues that the more the public is aware of a risk (for example through the risk discourses presented in this analysis), the greater the risk appears to be (Beck 1992:57). This therefore, necessitates further action in alleviating public feelings of helplessness and dread. Risks are thereby not only socially created facts but also important market opportunities – as risks grow in public importance new demands are created and the risks also grow in economic importance (Beck 1992:45). After the creation of an economic niche, the very existence of industries surrounding a threat makes it increasingly difficult for notions of risk to be dismantled.

In the case of AI, risk presents itself as a generalised notion of pandemic where the etiological agent (i.e. the mutated H5N1 virus strain) and the event of successful human-to-human transmission remain only vague future notions. Due to the indefinite nature of this risk, it is impossible to have a truly preventative action, and rather a symbolic industry is born (Beck 1992:57). In this case, the symbolic industry involves the manufacture of vaccines and treatments which are likely to be ineffectual in the case of an actual pandemic. What is necessary is not that the risks are eliminated (since they cannot be eliminated unless their very existence is questioned) but rather that a policy of eliminating risks is implemented. Such reactions are not uncommon, and instances of the creation of symbolic industries of risk management have arisen from many (perceived) 'social problems' (Lockie *et al* 2000). Thus, the politics of AI are part of a process of collective action surrounding risk, where public mobilisation necessitates a government response. Since it is virtually impossible to prepare for a future threat in a way that both appears to protect citizens and is actually effectual, the government must necessarily subscribe to the symbolic industries of vaccines and antivirals.

METHODOLOGY

Narrative texts, as linguistic and discursive processes, are of fundamental importance in

forming subjectivities and making the social world intelligible to those who live in it (Lupton 1994). Sociologically, the analysis of texts is important in understanding representations of illness, as narrative texts employ language to both present and constitute cultural interpretations of reality (Franzosi 1998). Textual analysis is utilised in this paper to provide not only an understanding of influential representations of AI, and anxieties present in Australian society regarding AI, but also to provide insight into broader socio-cultural notions of illness, infection and risk.

In order to study media representations, a retrieval of articles which focused upon the subject of AI published by *The Australian* newspaper was made using the Factiva database. *The Australian* newspaper was chosen due to its status as a national newspaper with a widespread distribution. The initial search locating all articles containing the phrases 'avian influenza', 'bird flu', 'avian flu', or 'H5N1' yielded over 700 results. The articles to be subject to analysis were selected by restricting the search to those using one or more of the terms at least five times, above 500 words in length (thus limiting the results to reports in which substantial commentary was made), and reported in the general/local news, features, or world news sections of the newspaper (filtering out many reports made in the financial sections, as the specific commentary of commercial concerns is not of primary interest in this study) (see Figure 1). The use of this search strategy resulted in the retrieval of 62 articles published between January 2004 and March 2007. Although a few articles were published between 1997 (the time of the first outbreak) and 2004, and a significant number of them from March 2007 to the time of the commencement of the data analysis (March 2008), these reports did not conform to the specifications of the search, typically due to the word count restriction.

The newspaper reports were of primary interest because the mass media play a role in both the generation and the dissemination of representations (Edy 1999; Inglis 1990). The narratives of the media facilitate the public understanding of social events by instilling them with meaning. In fact, the news media can be viewed primarily as an industry devoted to the production of representations (Lupton 1994).

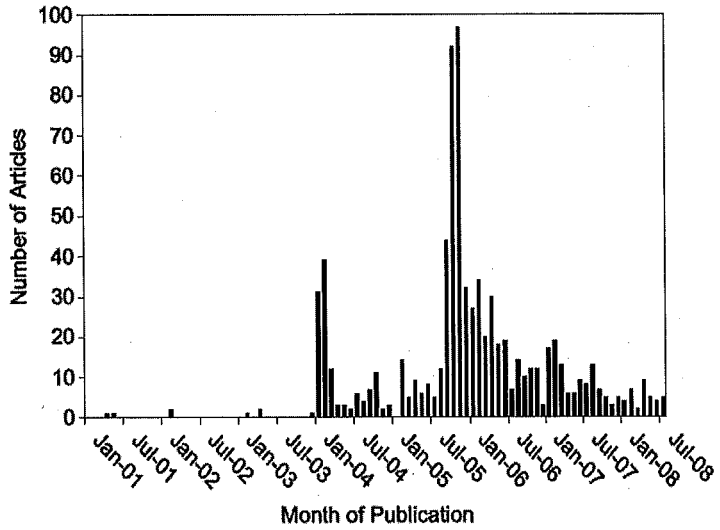

FIGURE 1: SHOWS THE NUMBER OF *THE AUSTRALIAN* ARTICLES WHICH CONTAIN ANY OF THE PHRASES 'AVIAN INFLUENZA', 'AVIAN FLU', 'BIRD FLU' OR 'H5N1' IN THE PUBLISHING PERIOD OF JANUARY 2001 TO AUGUST 2008.

Thus, the media not only reflect societal norms and values but also serve to create them. The relationship between media representations and public narratives is therefore a constantly reflexive process (Petts *et al* 2001). The media also play an important role in suggesting to the public what should be viewed as a social problem, and thus hold a prominent position in political agenda setting (Ward 2002).

In addition to the analysis of media narratives, a study of the Australian Federal Government's construction of the issue was also conducted. In order to study government narratives and actions in response to AI, an analysis of the 'Australian Health Management Plan for Pandemic Influenza' (hereafter referred to as 'Pandemic Plan') was conducted. This document was produced by the Office of Health Protection in the Department of Health and Ageing in May 2006 from an earlier (June 2005) version. As the defining government document in response to AI – covering the background, historical precedents, and preparation and prevention strategies – the Pandemic Plan was studied through comparison and contrast with the narratives that were provided from an analysis of the newspapers.

Government policy regarding the AI phenomenon is a manifestation of the social narratives surrounding the threat of pandemic. Thus, government policy serves to itself construct and also sustain a system of beliefs surrounding the reality of AI. It has been noted that government policy is produced as a result of existing societal discourses, including the construction of the problem by other social institutions such as the media (Hastings 1998). However, in addition to being constructed as a reaction to cultural ideation surrounding AI, the creation and implementation of government policy in itself displays narratives of the phenomenon (Atkinson 2000). This is because policy documentation must necessarily define the 'problem' under question. This definition occurs through social processes of argumentation, which result in the production of shared notions of reality (Hastings 1998). Fundamentally, the goal of government policy is not merely to define the problem but essentially to effect a solution to that problem. Thus, unlike the media narrative, the aim of government policy is to provide resolutions. However, through the narrative process, the solution to the problem is necessarily framed within definitions of the problem itself; thus the depiction of the causes of the problem will serve to create the actions taken (Atkinson 2000).

THE HISTORICAL CONTEXTUALISATION OF AVIAN INFLUENZA

Although avian influenza was an emerging and 'new' virus, its characterisation necessarily reflects pre-existing ideas regarding infectious disease (Fleck 1979). This can be attributed to the fact that one of the ways in which people come to understand a novel phenomenon is through reference to an existing comparative framework (Marková and Farr 1995). Thus, analogy is one of the primary ways in which prevailing thoughts and ideas are represented and organised (Arber 1954; Sontag 1978). The narratives of AI studied in this paper will be shown to draw heavily upon analogies to past influenza pandemics. Notably, the Spanish Influenza pandemic of 1918–1919 provides the dominant model for contemporary understandings of AI. In fact, the Spanish Influenza pandemic is a recurring theme in the newspaper and government documents.

Within the long general history of human infection with influenza, the Spanish Influenza pandemic of 1918–1919 distinguishes itself as a fearful event (Crosby 1976). Spanish Influenza is upheld as a prototypical example of an influenza pandemic, despite the surrounding scientific controversy and its atypical epidemiology and manifestation (Taubenberger and Morens 2006; Tognotti 2003). Nevertheless, in terms of public memory of pandemic influenza, the Spanish Flu predominates.

The course and impact of Spanish Influenza highlights its status as a source of anxiety. The Spanish Influenza virus/es had spread across the globe in a matter of weeks (Phillips and Killingray 2003). Although estimates of morbidity and mortality rates are highly inconsistent, it is suggested that the death rate ranged from approximately 20–100 million worldwide. In Australia, an estimated one million individuals were infected, with tens of thousands of deaths (Barry 2004). However, it was not only the high mortality rates which led to the fear of the illness. The unpredictability of infection and the swift nature of death were major causes of public alarm (Graves 1969). Additionally, there were dramatic changes in the structure of social life at the height of the pandemic. These included the rise of media hysteria surrounding the disease, the breakdown of social life through quarantine (Hyslop 1994) and the more symbolic isolation of individuals (evidenced through the rise of a culture of mask wearing and social distancing), and the breakdown of public and employment structures (Graves 1969).

Spanish influenza is indeed the disease which was most often referred to in discussion surrounding AI, and served to provide an analogy to the potential threat of AI. Of the sources collected, many of the newspaper articles made significant reference to the Spanish Influenza (Dayton 2005; Eccleston 2005; Henderson 2005; Kerin and Mayes 2005; McCracken and Curson 2005; Wood 2006). As a further indication of the salience of this analogy, one article, 'Flu of the Past has Lessons for the Future' in fact focuses upon the direct comparison of AI to Spanish Influenza (McCracken and Curson 2005), thereby reinforcing the idea of a conceptual link between Spanish Influenza and contemporary events. Furthermore, in addition to the media references to Spanish Influenza, the government report makes perhaps an even more fundamental linking of AI to the existing cognitive schema surrounding that past pandemic. In fact, the very second line of the introduction to the Pandemic Plan makes reference to the Spanish Influenza and notes the devastation and high death rate caused by that event (Office of Health Protection 2006:6). In this way, the government report as a whole is framed around this initial allusion to the Spanish Influenza pandemic.

Thus, the constant and prominent references to the historical events of the Spanish Influenza pandemic suggest that this past experience provides a primary basis of comparison for contemporary Australian conceptions of AI. Through its construction in the context of this incident, the AI phenomenon is endowed with all of the social meanings and understandings which are embedded in the remembrances and interpretations of the Spanish Influenza pandemic (see Olick and Robbins 1998).

However, overall it is difficult to comprehensively situate the degree to which Spanish Influenza and ideas of contagion in general resonate within the public imagination. For example, it is suggested by one historian that while individuals who lived through the Spanish Influenza pandemic retain a sense of dread surrounding influenza, the instance is largely forgotten by the general public (Barry 2004). In contrast, Herzlich and Pierret suggest that it is a paradox that great epidemics, although 'entrenched in culture as deeply as any myth, are no longer part of the individual consciousness. People no longer refer to them when speaking of illness [as other diseases such as cancer have taken predominance as the prototypical example], and the fear of the scourge has vanished' (1978:40). As Halbwachs (1992) argued in his germinal book *Social Frameworks of Memory,* issues of collective memory are not issues of individual memory but of the group's memory. Corresponding more closely to this second approach, the data analysed for this paper serve to suggest that at the collective level narratives of contagion are still very much alive in contemporary Australian society in the sources analysed in this paper. Thus, the textual analysis indicates that the AI threat has in fact re-awakened long-latent disease narratives

and resonated with an historical conception of contagion in Australian culture (Bashford 2002; Bashford and Strange 2003).

Risk

The analogy with Spanish Influenza characterises discourses of avian influenza through conceptions of threat and linking to past experience. Furthermore, at its core AI is presented as ominous and worthy of a fearful response because it is a potentially catastrophic future event. Thus, even though the probability of an AI pandemic may be small, the magnitude of destruction which would be caused in the event of a pandemic is necessarily large. This feature situates AI as a risk, resulting in the widespread development of risk discourses. Correspondingly, risk is one of the most salient notions present in all narratives of AI.

The communication of risk – the media

One of the ways in which the media manages to communicate the strong likelihood (or even inevitability) of an AI pandemic is through the use of statistics, estimates of probability and numbers. For example, it is maintained that the AI pandemic will be disastrous in terms of the economy (*The Australian* 2007), and the problem has necessitated massive governmental spending (such as the '$100 million-plus order' of antivirals – Gluyas 2005). These large numbers are suggestive of the size of the problem. However, more potent even than these economic figures, are reported estimates of infection and death tolls. These statistics vary widely, but nonetheless are usually large. For example, one article suggests that 'over 2.6 million Australians' would become infected and '13,000' would die (Kerin 2005), while several others quote one scientist's estimates of between 5 million to 150 million deaths worldwide (Henderson 2005). Importantly, the derivation of these figures is never explained, contributing to a generalised sense of risk.

A good example of the wide ranging claims made about such risk estimates is the reporting of a statement made by (then Health Minister) Tony Abbott who suggested that the likelihood of infection in Australia was '10 per cent in any one year' (Cresswell and Murphy 2005). Additionally, in association with such specific figures, very vague numbers are also forwarded, such as those suggesting that AI 'could kill millions' (*The Australian* 2007). Even direct citing of mortality rates, of around 50% by World Health Organization (WHO 2008) estimates, as evidence of the 'deadly' nature of AI is problematic. This is due to the fact that not all infected individuals will be subject to WHO surveillance (and are therefore absent from statistical analysis) (Best 2008).

Regardless, it is not the statistics in themselves, but rather the very use of such statistics which creates risk perception. Quoting large figures, a particular means of risk communication, magnifies notions of risk because large figures necessarily link in the minds of the audience with a large problem. Statistics certainly have a useful place in framing knowledge about society, and can be utilised to simplify and explain complex social phenomena in a way that heightens understanding and serves as a basis for easy comparison. However, statistics are often treated as objective representations of the truth (Best 2001; Smith 1985). In contrast with this perception, due to their nature as 'facts' which are primarily constructed, statistics are necessarily representations. For example, as suggested, 'risk' is not an objective concept but is rather in itself a socially produced notion; in this way, risk statistics are wholly dependent upon statisticians conceptualisations of what 'risk' actually constitutes (Bartholomew 1995; Heyman *et al* 1998). Furthermore, according to Hindess (1973), even more critical is the fact that statistics are produced through collective activity and are therefore tied to the specific organisational context and the overall cultural meaning system in which the construction is

embedded. In this way, statistics are generated for political and professional purposes and reflect the structure of social relations (Forde 1988; Paterson 1981).

Combined with this use of intimidating figures is the concept of certainty in the amplification of risk. In the vast majority of the newspaper articles pandemic influenza was portrayed as an inevitability. For example David Nabarro, leader of the United Nations taskforce investigating AI, is cited as stating 'I am almost certain that there will be another pandemic soon' (Powell 2005) and in another instance it is maintained that 'Britain's chief scientist warned that at least 50,000 British citizens would die "when, not if" the avian influenza took hold of Britain' (Gluyas 2005). This second claim particularly reinforces the notion of inevitability; we are told that (a minimum of) 50,000 Britons *will* die as a result of AI. Such a suggestion is guaranteed to heighten perceptions of threat. Furthermore, it was also reported that 'H5N1 is considered the biggest disease threat to humanity' (*The Australian* 2005), thereby raising its status above all other health concerns. This concept of threat was also exaggerated through reporting of the geographical progress of the disease, where AI was portrayed not as sporadic individual cases and clusters but rather as marching steadily across borders and entire continents. Here, individual cases in Romania and Nigeria were depicted as the incursion of the disease into the whole of Europe and Africa (Bita 2006).

In addition to numbers, the use of language heavily mediated the way in which the AI phenomenon was constructed, especially in conveying narratives of risk. This is seen through the description of the H5N1 virus as (to list a few) 'deadly' (Hawkes 2006), 'aggressive' (*The Australian* 2005) and a 'lethal storm' (Eccleston 2005), and the comparison of AI with events which spark panic in the public consciousness such as the Boxing Day tsunami (Eccleston 2005), Hurricane Katrina (Nason 2005) and bioterrorist threats (Rudd 2005). Equally alarming are comparisons to other infectious agents that are either highly destructive or grotesque such as Ebola virus, Nipah virus, bovine spongiform encephalitis (Kerin 2005; Maegraith 2004) and (especially common, as already discussed) the 1918 Spanish Influenza. The language of invasion and war (Cresswell 2006) and images of combat against a stealthily approaching enemy (Dayton 2005) are similarly used to illustrate the geographical progress of infection and heighten notions of threat and attack. As reported in 'Bird Flu to Strike UK Exports', we must 'live with the constant threat' of outbreak (*The Australian* 2007). In such a way, threatening characterisations of AI predominated. It is also important to note that these metaphors and assertions were also frequently performative in that they change the definition of the situation under consideration (Austin 1962). By framing the phenomena in this way, the reader is compelled to think and act as though AI corresponded to these represented realities.

The communication of risk – the government

Through its use of all the abovementioned devices, it is therefore clear that the media forwarded a narrative of high risk. However, the comparison of media and government discourses provides an interesting juxtaposition. Unlike the suggestions of threat constructed in the media, the government narrative regarding risk was much less menacing. Here, it was suggested that there is '...no evidence that the H5N1 virus can spread efficiently from human-to-human, and there is no immediate threat to the health of Australians' (Office of Health Protection 2006:6). The Pandemic Plan called for restraint due to the fact that the government holds an interest in maintaining an awareness of AI without going to the extent of alarming the public over its existence (Gray and Ropeik 2002). This is also seen in other calming expressions

used throughout the Plan, suggesting that there is 'little danger' of effective human transmission, 'little chance' of infection to consumers of poultry products, and pointing to 'high standards' of infection control and hygiene practices in Australia. It was thereby maintained that Australians are at low risk, and effective patterns of surveillance and safety are likely to keep the community protected. This is not, however, to suggest that AI presented no threat at all. AI 'remains a concern because of the high fatality rate' (Office of Health Protection 2006:12), and because a pandemic is likely to evolve in countries which do not uphold Australian standards of sanitation.

Another area where the government discourse differs from that produced in the media is in notion of certainty. Throughout much of the newspaper reporting, a rhetoric of certainty was espoused whereby the AI pandemic was seen as a definite future event. In contrast, the government acknowledged the current lack of certainty surrounding the phenomenon. For example, in the introduction to the Plan it is suggested that 'the chances of another influenza pandemic are unknown' (Office of Health Protection 2006:6). In fact, the concept of uncertainty permeates throughout the document, not only in regards to the likelihood of a pandemic but also in regards to the evidence surrounding the phenomenon. Thus it is suggested that 'there is no evidence of efficient human-to-human transmission. Scientific opinion about whether H5N1 will become better adapted is mixed' (Office of Health Protection 2006:12). However, although the media and government narratives of certainty are opposed, the government's concept of uncertainty does not effect to diminish the notion of risk. Here, the fact that scientists are uncertain about the future and effects of AI only tends to reinforce the notion that we have been caught unprepared. This narrative therefore fits in with the tendency for societies to perceive a health threat as more risky where science and medicine fail to adequately explain it (Herzlich and Pierret 1987).

Furthermore, although the government conveyed a less threatening concept of risk than the media narrative, one of the methods used to convey the notion of risk in the Pandemic Plan mirrors a technique used by the media. This is the reference to past pandemics, including the Spanish Influenza. As already shown, the Spanish Influenza pandemic provides a frame of reference for AI narratives and links AI with existing fears. In the same way, an entire segment of the Plan (section 1.4.) is devoted to a discussion of the history of pandemics. This therefore depicts AI as rooted in what is conceptualised as the historical struggle of humanity against infectious disease (Foege 1991; McNeill 1976; Watts 2003). Again, the historical comparison made in this instance lends to the further creation of risk perception, through the conceptual linking with past pandemics. The government narrative of risk, therefore, while less strident than the media narrative, nonetheless situates AI as a phenomenon of great concern.

Symbolic industries of risk

The government and the media narratives also diverge in respect to their depictions of scientific solutions to the threat. Here, while the dominant government narrative appears to mirror that of the media, where scientific progress is upheld through the production of vaccines and antivirals, a secondary narrative of uncertainty regarding scientific progress in regard to AI occasionally also surfaces. One of the most interesting facets of the government narrative regarding science is the oscillation between the dependence upon antivirals and vaccines and the acknowledgement that the scientific understanding of AI has not reached the stage where the effective production of these is possible. This conflicting discourse leaves the government in a position whereby it needs to rely upon vaccines and antivirals while simultaneously questioning the efficacy of such actions. Thus it is suggested

that a vaccine which 'gives good protection against a pandemic virus can only be developed after that strain appears', yet it is also maintained in the very next paragraph that:

> ...it is possible that a vaccine using the [current] H5N1 strain of influenza may give partial protection if that strain changes and spreads more easily among humans...The government is committed to buying a substantial amount of the H5N1 vaccine [against the current strain] as soon as it is proven safe and effective. (Office of Health Protection 2006:13).

Note the numerous qualifiers (possible, may, partial, if) that indicate the uncertainty of the proposition that a vaccine using the current strain will be effective. However, despite this high degree of uncertainty, the government had made a sizable economic commitment to stockpiling these vaccines. This decision is replicated in the case of antiviral medications. Here it is suggested that 'evidence about the effectiveness of antivirals is limited and mixed' (Office of Health Protection 2006:13), however:

> ...antivirals may have some effectiveness in preventing infection and in treating pandemic influenza. Antivirals have received much attention in Australia as a possible response...the National Medical Stockpile includes one of the largest per capita supplies of antivirals anywhere in the world (Office of Health Protection 2006:13).

Again, although the government acknowledges that the efficacy of antiviral use is questionable, a commitment is made to the stockpiling of this medication.

However, although it is evident that the government subscribes to these symbolic industries, it is also clear throughout the Pandemic Plan that these measures raise numerous questions. It is not only the efficacy, but also the timing of the administration of medication, the possibility of viral adaptation causing antiviral resistance, and the equitable distribution of medication which cause concern. Perhaps as a reaction to such tensions, though the primary narrative is that of the ability of scientific progress to remove these uncertainties, there is also a competing secondary narrative. This is appreciable in various instances where AI is treated as more complex than a solely technical/scientific issue. Furthermore, in the appendix of the Plan, a narrative of the fluid nature of scientific facts is also expressed. This includes the acknowledgement of shifts in scientific thinking (Office of Health Protection 2006:50) and addresses the 'current evidence' of the efficacy of antivirals. It is even suggested here (and not in the main document) that the best use of antivirals may be in a containment strategy:

> ...there is no conclusive data showing that antiviral treatment can save lives. In the absence of such evidence, some individuals with pandemic influenza will receive treatment, because it can decrease the spread of the virus (Office of Health Protection 2006:49).

The use of antivirals to control pandemic spread (and not primarily as treatment) is an interesting concept, but one which is likely to be controversial. It is perhaps telling that this narrative of antivirals as containment is not introduced in the main document (where a symbolic argument of antivirals as treatment is presented) but only in the appendix. Thus, although scientific dominance is evident throughout AI narratives, the position of science and scientific industries in coping with the risk is generally symbolic and somewhat conflicted.

Conclusion

This research demonstrates the social location of contemporary debates surrounding pandemics in socio-historical collective memories. Utilising the work of Durkheim on social representations and of Beck on risk, it was shown how these two theoretical constructs can be useful heuristically: social representations and risks are synergistically reflexive, and we show how this process has manifested itself in this particular case study.

Two sources of social representations of Avian Influenza were analysed. The government and the media sources analysed here have similarities and differences. Both produce narratives situating avian influenza through the collective memory of the (catastrophic) Spanish Influenza pandemic. However, while the media emphasise threat and risk and calls for a scientific, antiviral-based solution, the government is more circumspect and neither amplifies the risk nor promises solutions which cannot be delivered. This leaves it with a problem which is resolved by appeal to the symbolic industries of risk prevention; in this case the antivirals. Hence symbolic representations of disease lead to symbolic solutions. Future research in this area could move into other substantive areas of sociological interest, mobilising both the theoretical and methodological frameworks established in this paper. In particular this includes the shaping of the pandemic discourse by other stakeholders such as pharmaceutical companies, who given the emphasis antiviral and vaccines, are likely to be key to the pandemic response. Other research could also focus on the way in which representations of disease act as barometers of social integration, for example, examining the attribution of blame through exclusionary discourses.

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