Hygiene and biosecurity:
The language and politics of risk in an era of emerging infectious diseases

Abstract

Infectious diseases, such as MRSA and avian influenza, have recently been high on the agenda of policy makers and the public. Although hygiene and biosecurity are preferred options for disease management, policy makers have become increasingly aware of the critical role that communication assumes in protecting people during outbreaks and epidemics. This article makes the case for a language-based approach to understanding the public perception of disease. Health language research carried out by the authors, based on metaphor analysis and corpus linguistics, has shown that concepts of journeys, pathways, thresholds, boundaries and barriers have emerged as principal framing devices used by stakeholders to advocate a hygiene based risk and disease management. These framings provide a common ground for debate, but lead to quite different perceptions and practices. This in turn might be a barrier to global disease management in a modern world.

Key words: risk, infectious diseases, hygiene, biosecurity, health language, communication, metaphor, corpus linguistics

Introduction: Emerging diseases

Human history is intimately connected with the history of disease. It has been suggested that the course of human events, the shapes and histories of nations and the outcome of world wars depend on how disease is managed (McNeil 1977; Oldstone 2000). Some commentators have argued that late modernity is characterised by the ever more frequent emergence of novel diseases which present an epidemic threat (Karlen 1996). This may reflect the emergence of novel 'world systems' (Wallerstein 2004) for the migration of people, foodstuffs and other commodities, with corresponding opportunities for diseases to transcend international boundaries. Other commentators argue that many nations are poorly prepared for outbreaks of disease and point to the inevitability of a 'coming plague' (Garrett 1995). The greater likelihood of epidemic disease is argued to be linked to the growing proportion of the human population living in cities (Leon 2008) which the World Health Organisation (2007) sees as a threat to 'public health security'. This is compounded by what Garrett (2001) describes as a 'betrayal of trust', in that many nations have chosen to de-prioritise investment in public health. Thus, the systems to deal with disease outbreaks are at best fragile, and even diseases for which there are established and effective means of treatment and containment such as tuberculosis, bubonic plague, leprosy and ebola, are able to make inroads into vulnerable populations, especially where urbanised poor people are under-protected by public health measures - a situation that might be exacerbated by climate change (Biello 2008).

The picture painted by many commentators, then, is that of a world of increasingly fragile, progressively more vulnerable, urbanised citizens, in which systematic and rigorous attempts at public health intervention are handicapped by a growing austerity in the financial climate. Novel diseases may emerge, well known ones may gain a fresh foothold, and transmission may be enhanced through cheap tourism, global food movements, economic deregulation and international migrations of labour (Farmer 2001).

The sociology of risk: Beck's legacy

At the same time as epidemiologists, historians, sociologists and commentators on public health have been elaborating this picture, within sociology itself there have been novel developments to help place these increasingly obtrusive threats in a theoretical and social context. For Giddens (1999, p. 3) it is 'a society increasingly preoccupied with the future (and also with safety), which generates the notion of risk'. The sociology of risk has developed dramatically in the last couple of decades, taking its cue especially from Beck's (1992) seminal *Risk Society*. Here, Beck defines risk as a 'systematic way of dealing with hazards and insecurities induced and introduced by modernization itself' (Beck 1992, p. 21).

Whilst human societies have always been exposed to some degree of risk, contemporary societies are, it seems, confronted by a type of risk that results from the modernization process itself and which alters the fabric of social organization. Important elements of modern risks are produced in and through human activity. These latter types of risk have been described as

‘manufactured risks’ (Giddens 1999). Beck argues that by contrast with earlier periods, ‘risks depend on decisions, they are industrially produced and in this sense politically reflexive’ (1992, p. 183). Beck (1992, p. 153 - 4) maintains that risk and the individualization which is characteristic of contemporary societies are both aspects of the ‘reflexive modernization of industrial society’. Risks are both formally constituted in scientific terms and are a ‘new source of conflict and social formation’ (p. 99).

As Burgess (2006) notes, risk has become a framework through which governments conduct their affairs. As the then Prime Minister Tony Blair put it: ‘Risk management . . . is now central to the business of good government’ (Cabinet Office 2002, p. 2). Governments have assumed the role of risk managers-in-chief (Moss 2004). The ‘risk management of everything’ has diffused throughout professional life (Burgess 2006; Power 2004).

Yet researchers have focused on a considerably broader remit than the actuarial notion of risk. That is, rather than attempting to calculate the likelihood of an adverse event, they are also interested in how risks get formulated and communicated in a particular ways. In this field, scholars have reflected upon the way in which social and individual processes work to amplify or dampen the sense of risk (Pidgeon et al. 2003). Once we begin to see risk as a social, communicative phenomenon, a variety of other features begin to make sense. That is, culpable entities or individuals may be subject to stigma, activate systems of regulation, yield economic losses or opportunities, and so on. These may occur relatively independently of the

actuarial risk involved (Barnett & Breakwell 2003; Masuda and Garvin 2006). Many authors have focused upon mass media representations as a key site where the representational, metaphorical and communicative work related to scientific phenomena and risk takes place. For example, Wallis & Nerlich (2005) have examined the metaphoric framing of SARS as a 'killer' and Washer & Joffe (2006) describe how social representations of methicillin resistant *Staphylococcus aureus* (MRSA) in newspapers link it to issues of the management of hospitals and the erosion of authority and morality previously ascribed to matrons in UK healthcare facilities. The news values that structure mass media discourse often involve dramatizing the risk. Sometimes scientists are quoted in a way which urges moderation rather than panic – this was evident in Lewison's (2008) work on SARS for example – whereas at others, scientists consciously use the media to get their warnings about an impending risk, such as a flu pandemic, across to policy makers and the public (Nerlich & Halliday 2007).

Nevertheless, despite the ostensive social constructionist commitment of many researchers in this field, as Burgess (2006) notes, there is a tendency to rely on the actuarial or expert-defined risk level as if it were somehow 'real' and the public version as if it were the 'socially amplified' one. Yet even the expert-defined, statistical or actuarial notion of risk is itself subject to multiple layers of interpretation and collectively mediated judgement. At a simple level, the reluctance or willingness of officials and health professionals to identify and record a case with ambiguous symptoms as, say, MRSA, Avian flu, SARS and so on will be informed by their sense of context, government

policy, and increasingly in this day and age the ‘challenging new targets’ they are under pressure to meet. Again, this is not entirely new, as Duffy has shown in *The Sanitarians* (1990) when reporting on TB in New York in 1897.

More recently, students of the sociology of risk have noted that in a risk society there are a number of authoritarian and individualising tendencies in the way contemporary risks are discussed and managed (Brown & Crawford 2009; Mythen & Walklate 2006). That is, risks are devolved down through human organisations so that they are borne increasingly by individuals rather than the collective or organisation itself, and this is arguably a part of neoliberal politics (Pollack 2008). As Pollack also notes, in neoliberal regimes, the role of human service professionals is increasingly taken up with gauging the risks attaching to their clients through the use of standardised risk assessment instruments. In the same way, Brown & Crawford (2009) identify how, in press and policy discourse the risk of developing MRSA is coming to be formulated in terms of the characteristics of the client – their being very young, very old or otherwise frail or immunocompromised. Shifts in societies and ideologies, then, correspond to shifts in how risk is seen and who is seen to be responsible.

Emerging diseases – a new public health paradigm

Through much of the 20th century until the early 1990s, public health experts and officials in the West believed that infectious disease was more or less conquered, and could be eradicated (Hinman 1966; Cockburn 1967).

As Snowden (2008) documents, this optimistic, eradicationist agenda was challenged, first by AIDS in the 1980s and then in the 1990s by outbreaks of Asiatic cholera in Central and South America, plague in India in 1994, and ebola in Zaire in 1995 among others. The global health community's attention was focused by the US Institute of Medicine publication *Emerging Infections: Microbial Threats to Health in the United States* (Lederberg et al. 1992). Shortly thereafter, the World Health Organisation focussed explicitly on emerging diseases in its 1996 World Health Report (WHO 1996, p. 56)

> Emerging infectious diseases are those whose incidence in humans has increased during the last two decades or which threaten to increase in the near future. The term includes newly-appearing infectious diseases or those spreading to new geographical areas. It also refers to those that were easily controlled by chemotherapy and antibiotics but have developed antimicrobial resistance.

In the second part of this paper we will concentrate on two types of infectious diseases that have recently preoccupied policy makers, health protection agencies, the media and populations at large. MRSA and Avian flu will provide a focus for our discussion of cultural, linguistic and social practice surrounding emerging disease risks.

Setting the scene: Avian influenza and MRSA

Avian influenza is a zoonosis or animal disease – in this case predominantly in poultry - that can also affect humans. Avian influenza viruses can be low or

high pathogenic and have been around for decades. Recently, a new highly pathogenic strain has emerged, H5N1, which has spread rapidly around the world and infected millions of birds, as well as 387 humans who had close contact with them, 245 of whom have died as of September 2008 (World Health Organisation 2008). The significance of this zoonosis lies in the likelihood that the virus or a similar one may mutate or combine with a human flu virus and become sustainably transmissible between human and start a human flu pandemic. Many commentators have highlighted how governments are ill prepared for such a crisis (Keil & Ali 2007). As well as the question of pharmacological preparedness, governments are particularly ill-equipped to deal with the complex cultural topography of the global economy where multiple actor networks and vector webs, stretching between birds and humans, the poultry industry and backyard farming, trade routes and traditions intersect to facilitate the spread of disease. Consequently there is considerable anxiety that a human flu pandemic similar to the one experienced around the world in 1918 could recur. Fear about such a scenario was heightened when scientists discovered that the 1918 virus had also been of avian origin and managed to recreate it in the laboratory in the autumn of 2005, at the height of anxieties about bird flu and pandemic risk (Hellsten & Nerlich, forthcoming). Fortunately, for now, this still seems to be a pandemic ‘in waiting’. Nevertheless the UK government’ s National Risk Register (Cabinet Office 2008, p. 5) places it as having the highest relative impact and among the highest relative likelihoods of any of the risks they monitor.

At the same time, but particularly in 2005, the risk increased to hospital patients from MRSA, a bacterium responsible for difficult-to-treat infections in humans. MRSA is by definition a strain of *Staphylococcus aureus* that is resistant to a large group of antibiotics. This issue became a growing concern in the UK and a political topic that dominated the general election that year.

Planning for a world-wide flu pandemic of avian origin has not stopped altogether, but no longer has the urgency it had for governments in around 2004 and 2005. The risks posed by hospital acquired infections, by contrast, have grown, as other pathogens have emerged, such as Clostridium difficile, and evolved strains of MRSA with increased virulence, such as Panton-Valentine leukocidin or PVL, which, unlike hospital acquired MRSA, can infect people in the community, especially in gyms and prisons.

Reliable ‘cures’ for MRSA or pandemic flu seem a long way off, and governments, policymakers and the public are often at a loss to know how to respond. It is becoming increasingly clear that the answer may not be found in the laboratory, but rather in a better understanding of how communication works at various levels of policy, media and stakeholders. As Wallace et al. have recently pointed out in a paper for the *Bulletin of the World Health Organization*:

> In extreme situations, communication assumes a critical role in protecting people's health around the world. In outbreaks and epidemics, successful communication of risk and the mitigating actions that can be

> taken is often the most crucial element of effective outbreak management (Wallace et al. 2008, p. 500).

In order to communicate ‘better’, it is first necessary to understand what type of communication has already ‘happened’ in relation to these two emerging risks to human health in the media, in policy discourses and in the discourses of practitioners themselves. This was the focus of a project funded by the UK’s Economic and Social Research Council that explores communication relating to health, hygiene and risk that we report on here. The project continues and complements other work on the language and politics of infectious disease risks and on the discursive and metaphorical framing of infectious diseases, carried out in relation to foot and mouth disease and SARS, for example (Nerlich et al. 2002; Wallis & Nerlich 2005; Washer & Joffe 2006). One of the lessons learned from these epidemics is that the way people communicate about a threat largely determines how they are likely to understand it and behave toward it. As Powers and Xiaosui put it with reference to the ‘social construction of SARS’, ‘[w]e communicate ourselves into a particular way of thinking and acting’ (Powers & Xiaosui, eds. 2008).

Our own work on the subject of emerging diseases has been informed by a number of traditions of inquiry. First, there is a significant strand of cultural and anthropological studies. Since the publication of Susan Sontag’s work on AIDS (Sontag 1979), we know that how specific diseases or illnesses are linguistically framed affects people’s attitudes and behaviour towards these illnesses. Since the publication of Mary Douglas’s (1966) seminal book *Purity*

and Danger, sociologists and anthropologists have studied hygiene and cleanliness in the context of the cultural understanding of risk. Our interest in hygiene, in terms of hospital cleanliness and farm biosecurity, reflects the integral role this plays in policies implemented to deal with the risk of emerging infectious diseases. Sontag's perspective on illness as metaphor work also forms a bridge into a second strand of scholarship, concerning the role of metaphor in making sense of illness.

Metaphor and disease: The journey of avian influenza

Following on from Sontag, other authors (e.g. Radley 1995) have signalled the important role of metaphor in personal accounts of illness experience and the role this plays in cognitively and linguistically constructing the experience and course of illness. This has implications for how illness is represented to oneself and others – we may talk about 'stabbing pains' or, in the case of a woman with multiple sclerosis interviewed by Duval (1984) talk about becoming a 'vegetable'.

Consequently, the notion of metaphors seemed to us to offer valuable opportunities for the study of emerging diseases (Koteyko et al. 2008). In recent years, students of metaphor have explored its role in political language where the deployment of cultural conceptual models, root metaphors and the formulation of ideologies is particularly crucial (Dirven et al. 2001). A more recent body of work has focused upon discourse metaphors that function as key framing devices (Zinken et al. 2008). The source concepts of discourse metaphors refer to phenomenologically salient real or fictitious objects that are

part of interactional space (i.e., can be pointed at, like MACHINES or HOUSES) and/or occupy an important place in cultural imagination; and, conversely, discourse metaphors themselves involve highlight salient aspects of a socially, culturally or politically relevant topic. They frame and organize shared narratives of politics; they are embedded in discursive formations and networks of power, and they are constitutive of certain views of the world, of society, and of how things work. As Lakoff (2004) argues, the framing of issues and the metaphors deployed can have important implications for how policies are formulated as apparently natural and sensible responses to the issue in question (see also Nerlich 2004).

This ties in with Musolff's (2006) study of *metaphor scenarios* that organise metaphorical source concepts into mini-narratives and articulate 'a set of assumptions made by competent members of a discourse community about 'typical' aspects of a source-situation [e.g. marriage]' in order to talk about states, nations or politicians for example (Musolff 2006, p. 28). Scenarios are also reminiscent of what Wodak (2006) calls 'cognitive frames', 'event models' or 'heuristic metaphors', emphasising how they function to enable us to discover explanations for the events concerned. Much earlier, Goffman's (1974) concept of frame alluded to a similar phenomenon.

In Koteyko et al (2008) we identified three metaphor scenarios which structured the 2005 UK press coverage of avian flu: the journey/invasion scenario, the war scenario and the house scenario. The journey scenario dominated at the time of the analysis, as the virus was regularly depicted as

being on its way to the UK, and for the most part was not depicted as being endemic in the local poultry or human populations. Neither were there any reports that it had mutated into a form in which it could easily be transmitted between humans.

Using Lakoff's (1987) formulation of metaphors in terms of SOURCE, PATH and GOAL, our analysis (Koteyko et al. 2008) suggests that the further along the path a virus travels and the closer it gets to its imagined goal (conceptualised as a 'house') and therefore risk to the population, the more war metaphors are apparent in press coverage. It also seems to be the case that there is a difference in metaphorical framing and the framing of disease management options which depends on whether the crisis is seen as a national or global event. Once the virus has reached its goal, the nationalistic invasion scenario seems to be triggered and war metaphors become a way of talking about disease management, for example (as quoted in Koteyko et al. 2008, p. 252):

> "Sniffer dogs have gone on duty at Britain's airports as the first line of defence against bird flu." (*Daily Mail*, 19 October)
> "Front line of the bird flu war . . . a rickety row of sheds next to the abbattoir where foot-and-mouth began." (*Daily Mail*, 25 October)

Once the virus is in a country the travel scenario seems to change too, as the virus can now be conceptualised as adopting a wider variety of modes of travel, as illustrated by the foot and mouth virus that not only marches,

advances and reaches, but also speeds up, slows down, jumps, appears, disappears and so on (Nerlich et al. 2002).

The fear of bird flu was greater when it was a distant threat, compared with when it was detected in Britain. This suggests the politics of fear becomes more animated by the spectre of far-away threats (O'Neill 2007). The metaphorical framing of political issues and the kinds of metaphors they deploy give us apparently reasonable and natural courses of action. Events in the UK occasioned by the 'dead parrot' and the 'dying swan' (Koteyko et al. 2008) activated a reassuringly familiar range of discourses and associated precautions emerged, including 'locking down', 'sealing off', 'closing', disinfecting and so on. Such conceptualisations of 'security' are linked in turn to a rhetorical contrast between the 'outside', which is deemed to be dangerous, and the 'inside' which is locked down tightly, secured and safe (Chilton 1996). In this formulation, 'practices of border control do not simply defend the 'inside' from the threats 'outside,' but continually produce our sense of the insiders and outsiders in the global political economy' (Amoore & de Goede 2005, p. 168; Nerlich et al. in press) and boundary controls undergo a process of 'securitization' (Ibrahim 2005).

Given the sheer volume of material written in the press, by public officials and policymakers as well as social scientists about risks in health care, the study of individual news items can only ever scratch the surface of risk discourse. Accordingly, we have been exploring other methods which have the ability to accommodate much larger datasets in the study of discourse.

Corpus linguistics: The moral career of a microbe

Corpus linguistics is a relatively new application in relation to health care communication. However, recent explorations with this method such as Adolphs et al. (2004), Brown et al. (2006) and Koteyko and Carter (2008) have established its potential to generate insights about large bodies of data. Previously, accounts of communication in health care have relied heavily on observational, qualitative methods (Skelton & Hobbs 1999), often working with small data sets. Due to its inclusion of relatively large samples, corpus linguistics attempts to represent the wider field of language used in that particular domain (Stubbs 1996).

Using large data sets based on a complete capture of news coverage over a long period of time allows the analyst to account for a wide range of variation which might be present in the texts and therefore ground generalizations on more substantial and representative textual evidence. Thus, with large bodies of data, such as those associated with press coverage of MRSA, corpus linguistics is particularly well equipped to capture recurrent phrases in discourse and therefore can offer tools for making generalizations about meaning whilst retaining sensitivity to individual instances. Corpus linguistics can therefore provide grounding for qualitative analyses, complementing critical discourse analysis and metaphor analysis with a quantitative dimension which enables us to see the generality of the highly particular insights gained from qualitative analysis.

Thus, in Crawford et al (2008) we used this technique in undertaking a study of the UK national press and how it represented MRSA between 1995 and 2005. The overall picture of coverage could be seen as a drama or narrative in three acts, as the MRSA microbes undertake their 'moral career' (Goffman 1959) and different aspects of the problem rise and fall in a manner reminiscent of Downs's (1972) 'issue attention cycle'. The drama draws on various genres, stereotypical plot lines, characters and other historical or fictional narratives. The representations can be seen as being played out in the form of metaphor scenarios. In the first act the *dramatis personae* are personified forces of nature as well as earthly creatures fighting them, namely doctors and hospitals engaged in a battle of evil against good. The microbes are also endowed with an anthropomorphic degree of 'intelligence'. In the second act the victims of the personified bacterial forces are introduced and the doctors, hospitals and the microbes themselves emerge as perpetrators of crimes, as criminological metaphors predominate. These may be crimes of omission – not cleaning hands or wards – or part of the very discursive fabric of the infection itself, which 'stalks', 'lurks' or is 'at large' in hospitals. In the third act the nurses – who were on the sidelines in the first two acts - are empowered to mediate between the ambivalent heroes - the doctors - and the tragic victims of MRSA. In response to the superbug, we have the matron, a super-nurse who emerges equipped with political, symbolic and moral power, and as the story evolves so too does the slippage from questions of infection and contagion to ones of cleanliness.

The habitus of hygiene

These concerns about the kinds of empowerment, cleanliness and strength necessary to manage disease risks lead to the question of how people go about dealing with threats from disease in practical contexts. Our interview studies of practitioners in health and agriculture as well as policy documents directed at hospital staff and farmers suggest a whole range of practical strategies are in use. What is also interesting from a sociological point of view is the collective social activity people engage in to do so, and what it means to them. Thus, in our paper 'The habitus of hygiene' (Brown et al. 2008) we engaged with the work of Pierre Bourdieu (e.g. 1977) to explore the organised social practices of hospital matrons and infection control staff. Bourdieu's notion of habitus captures the combination of practical work, physical disposition and shared ways of looking at the world which were displayed in participants' accounts of labour in the health care field. Habitus is an embodied reality which often is taken for granted by a particular social group (Rhynas 2005, p. 185). 'Habitus captures the way the social is internalized individually; integrating all past experiences in the form of durable, lasting and transposable dispositions to think, feel and act' (Ahmed & Jones 2008, p. 60). As we showed in the 'habitus of hygiene' paper, the practice of hygiene disclosed to us involved three major elements. First, the 'securitization' of healthcare work, concerned with control, supervision, 'making sure' and the management of risk through inspection, audit and the exercise of responsibility. Securitization, for example, included differentiating the patients and placing some in an environment optimal for the containment of their infection:

> …every day we will go and see patients who've been diagnosed with MRSA, Clostridium, tuberculosis, scabies etcetera and make sure they're being nursed in the right environment. (Brown et al, 2008, p. 1050)

Second, the sense of struggle against doctors who were seen to represent a threat to the carefully organised boundaries, through such alleged violations as not washing their hands, wandering between theatre and canteen areas in soiled clothing and thinking the rules did not apply to them:

> …well he had a ring of blood across his belly and I approached him and said ''Do you know who I am?'' ''No,'' he said. I said ''Well I'm one of the theatre sisters and you should not be out dressed like that, get back upstairs and,'' and I really got sanctimonious on him ''Get back upstairs and change those scrubs, you shouldn't be dressed like that, you shouldn't be out in a public area dressed like that.'' And he went ''Oh right, oh I didn't realize.'' So doctors do seem to think that rules are made for everyone else but they're exempt, they are particular offenders. (Brown et al. 2008, p. 1051)

Third, a 'back to basics' theme emphasised the fundamentals of what they saw to be nursing work and were concerned with cleanliness and practically-based training – the habitus of hygiene itself. This was formulated in nostalgic terms with reminiscences about basic training earlier in the participants' careers.

> But when it was the extreme of the theoretical bit you know you had nurses coming out and qualifying who actually didn't really even know the basics in terms of practical stuff. And you know I can, you know we were taught the importance of hand washing and infection control and cleanliness and you know aseptic technique and all of those things and they were absolutely, you know had to be spot on whereas it seemed to get very, very slack. (Brown et al, 2009, p. 1052)

The preoccupation with hygiene and the 'basic' process of maintaining it can also be seen as a way of managing uncertainty, accruing a certain kind of symbolic capital and constructing and maintaining boundaries in the health care field. It also makes for self-governing, self-exploiting individuals who, as Bourdieu argued, accrue responsibility to themselves for implementing the 'habitus of hygiene'. There are similarities here to the 'performance' of biosecurity by poultry farmers who, we found, also construct and maintain boundaries in response to disease threats and government advice in how to deal with it, but who also tend to use this 'boundary work', e.g. wheel washing and disinfection mats, as symbolic and ritualised representations to tell non-farmers, including inspectors, vets and supermarkets that these threats were being dealt with professionally and properly (see Nerlich et al, in press). As one of our participants expressed it:

> […] the wheel washer so I mean that's, I do believe that to be, the supermarkets think it's wonderful, they come round on their visits, oh look at this you know. But it's cosmetic because you know with the best will in the world we've got birds flying over the hedge and defecating as they fly over the yard and this sort of thing and so the biggest fear is that we put our foot in something and walk it into our sheds. So the guys change their clothes when they get to work, so they have a set of work clothes and then we operate a double boot dipping method of keeping feet clean.

Conclusion: Emerging disease risk in a risk society

The new era of emerging diseases has had profound implications for human societies. A generation ago, writers on medicine, public health and immunology looked forward to a time when infectious disease would be conquered. Since the 1970s, this has been increasingly called into question by a series of threats from infectious microbes. This in turn impacted not only on medicine and health policy but also on social science, where theorists and researchers have grappled with the notion of risk and how it is communicated. In this paper we have focused especially on our own work and how we have attempted to push forward the social study of risk through a more detailed study of the language of risk used in a variety of public and practitioner contexts. We have considered how we may advance knowledge through attention to metaphorical dimensions of risk discourse, the analysis of large volumes of written material via corpus linguistics and the novel deployment of Bourdieu's theories to explore collective human practices to mitigate risk.

Also significant is the kind of politics which has flourished in the last generation. A number of writers have identified a trend they have termed 'neo-liberalism' (Barry et al. 1996; Burchell 1996), a political milieu where competition, individualism and personal responsibility are valorised. Citizens are, as Rose (1998) and O'Malley (1992) have argued, encouraged to become agents of their own government outside of state sponsored welfare and health provision, and are increasingly required to invest in their own prudent strategies for risk management in order to maintain their own well-being. On a recent visit to a relative in hospital one of us (BB) observed that other patients' visitors had come in equipped with dustpans, brushes, aerosols and sprays and were hard at work cleaning the floors and bedsteads around their incapacitated loved ones.

In the context of both the individualisation of risk and the globalisation of risk, concepts of journeys and pathways on the one and, of thresholds and boundaries on the other have emerged as principal framing devices used by the media, by policy makers and by practitioners alike when debating the risk of emerging infectious diseases. Preventing the risk of contamination and contagion by keeping microbes and dirt out or not letting them in to the nation, the farm or the hospital (the ward or the bed), becomes a practical as well as symbolic undertaking, where the local and global intersect just as much as the pragmatic and professional. As Turner (2007) points out, the contemporary global economy with movements of people, products and services as well as diseases has paradoxically led to an ever greater preoccupation with the

control of boundaries and the ‘enclavement’ of potentially hazardous or vulnerable things instead of leading to a more global disease and risk management. Real and metaphorical barriers have perhaps become barriers to disease management in modernity.

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