Environment and Planning A 2008, volume 40, pages 1528 – 1533

doi:10.1068/a4173

Guest editorial

Biosecurity: spaces, practices, and boundaries

Biosecurity might be crudely defined as making life safe. As this collection of papers will show, who does this work, on behalf of what or for whom, and with what kind of resources and results, vary widely. Some biosecurity practices are seemingly mundane but with broad consequences (like the use of disinfectants at farm gates to halt the movement of foot and mouth viruses). Some practices take us to a world of high-technology surveillance and cutting-edge science (like the World Health Organization's Centre for Strategic Health Operations, SHOC). All of the cases involve attempts to monitor, regulate, and/or halt the movements of various forms of life. Sometimes the focus is on animals or plants; often it is microbes. Sometimes the concern is triggered by disasters or 'accidents' (Law, 2006); at other times the cause for concern is a form of warfare or terrorism. Anticipation and preparedness for such events become part of the affective register of biosecurity. Sometimes the life that is to be made safe is seemingly straightforward (the sheep and cattle on a farm, for example, or the human population of a city where SARS is present), but often this apparent simplicity hides a more complex question over ways of life (particular kinds of agricultural and economic practice, or gaping inequalities in life styles between the healthy and the diseased). In short, biosecurity is as complex as life itself, and its practices give relief to certain problematics while managing to shield others from view. This collection of papers, which has arisen from a special conference session and has evolved through further discussions and readings, addresses the problematic of biosecurity (see the formative statement by Collier et al, 2004)

Making life safe is hardly a new concern. Nor has it ever been a straightforward matter. Even the most cursory and basic of lists of activities that enable the living to go on would include eating, reproducing, breathing, socialising, and all of these involve some kind of interaction with others. Living involves articulations with all manner of things. To live is to articulate and to circulate. It is a risky venture. So to make life safe is always going to be difficult. To stop the flow, to disengage from articulations, to come out of circulation, is to stop living. So a strictly prophylactic approach to making life safe clearly has its limits (see Dillon, 2007). Even high-profile attempts to reduce the risk of contact with harmful bodies through almost total isolation turn out to be about the regulation and differential valorisation of flows and circulations rather than pure quarantine.

Rather than biosecurity, as a set of named if divergent practices, being wholly new in terms of objectives or even in terms of its practices, it may be useful to approach the topic and these papers with a question which speaks to its recent rise to prominence and its current mobilisations and materialisations. Why has life become a salient matter for security? One answer to this question would be to link biosecurity to questions of risk, and to the risk society (Beck, 1992). As an organising principle, Ulrich Beck's 'reflexive modernisation' suggests a society more aware of its conditions, better able to deliberate on futures and their consequences. So biosecurity might simply be another example of a form of social reflexivity, and an increase in the will to control. But this emphasis on the cognitive capabilities of human societies is undermined by another sense that Beck gives to reflexive modernisation. Reflexivity here refers to the 'reverberations' that actions entail (Latour, 2003). It is the realisation that

any action discharges a series of consequences, only some of which will be known or knowable prior to the event. Instead of more mastery through greater awareness, risk society signals a world where "we become conscious that consciousness does not mean full control" (Latour, 2003, page 36). Bruno Latour radicalises Beck by emphasising social and material complexity, underlining the sense that there can be no true security, that risk is not simply more awareness, but that taking action to reduce risk is part and parcel of the social and material generation of risk. This kind of answer works well in some of the cases that follow in this special edition. But for others it feels somehow slightly parochial and centred on Euro-American and metropolitan societies where such contemplations are increasingly, Beck argues, part of life. So a second answer would be to mark the ways in which the density and network lengths of the articulations that make life live have produced a complex geography where states and locales are increasingly asked to conform to what is regarded (in the metropolitian core) as a safe world. The making safe of agriculture in places as diverse as southwest England and central China/Tibet are part and parcel of this spreading out of biosecurity. The unevenesses, even the imperialisms, involved in these globalising biosecurity practices have not gone unnoticed, as life becomes part of a geopolitical struggle to tame the periphery (Braun, 2007) and part of an epistemological or scientific elitism (Bickerstaff and Simmons, 2004; Donaldson and Wood, 2004). And yet, security in this format may be part of the problem. As some of the authors in this collection suggest, geopolitics may remain too wedded to a version of life, particularly nonhuman and nonorganic life, that can be contained and managed. Likewise, centralised expertise may be part of the problem [the touchstone here is Wynne's formative work (see Wynne, 1996)]. Once the vitality of living processes come to the foreground, once the articulations required for life are acknowledged, then the political game may change, and the question of exactly what kind of security comes into view. This is the reason some authors here return to Foucault [especially but not only Foucault (2004, 2007)], to his development of biopolitics and to his sense that security is itself a multiply enacted matter, and includes not just nation-states, territories, and military mobilisation, but also populations, networks, and social welfare. In sum, the papers here start to question the kinds of politics and practices that make contemporary biosecurities, questioning not only 'why biosecurity now' but also are current biosecurity practices sufficient or sufficiently multiple to be able to make life more rather than less safe?

Reflecting the diversity of biosecurity, our collection of papers is divided into three sections. We begin with three papers that analyse the relationships between biosecurity, people, and (farmed) animals. Running through each is a concern with the uncertainty, unpredictability, and difficulty of biosecurity, but in ways which raise opportunities for useful social scientific analyses of biosecurity. Steve Hinchliffe and Nick Bingham begin by providing an overview of the relationship between Foucault's concept of 'biopower' and biosecurity. Their paper suggests that what is important in the study of biosecurity are the 'interferences' and interactions between the various actors and things attempting to create secure arrangements. Using a case study of the Egyptian government's approach to highly pathogenic avian influenza in Egypt, Hinchliffe and Bingham show how various 'ecologies of action'—in the form of backyard and rooftop forms of agriculture—became associated with 'official' biosecurity threats, agricultural modernisation, and public health. However, the logic of biosecurity is not straightforward: opposing ecologies emerge out of the same political economies, and attempts to destroy them can be undermined by social and technical confusions. These multiple interferences and partialities of biosecurity control systems raise debates about their utility to provide biosecurity, and remain an ideal site from which social scientists can challenge the logics of biosecurity and biopolitics.

Next, Andrew Donaldson provides an account of biosecurity and the 2001 foot and mouth crisis. His account focuses not so much on what biosecurity is, but more, as he puts it, on 'what it is with'. In this, Donaldson is keen to show how biosecurity works as an 'organising idea' within a two-fold politics of risk. Firstly, Donaldson shows traces how biosecurity has become implicated in 'problem solving' as an antipolitical form of 'risk thinking' to close down debate on the most appropriate actions to take in disease emergencies. Farmers buy into biosecurity to demonstrate their competence (but see Enticott's paper below); and governments promote biosecurity to delineate appropriate behaviour in disease situations and impose some sort of regulatory order. However, in posing biosecurity as a problem-solving practice, another risk is made apparent: that the uncertainties of biosecurity also open up spaces for political debate in which new possibilities and configurations can be imagined. However, for Donaldson, this 'problem making' politics to biosecurity may also be a virtue, allowing social science to propose more productive animal health relationships.

Thirdly, Gareth Enticott examines farmers' resistance to new forms of biosecurity in the struggle to control the spread of bovine tuberculosis in cattle and badgers in the UK. For this problem, Enticott argues that biosecurity is made possible through a spatial duality of disease flows. Biosecurity finds favour with policy makers because it halts the flow of disease between cattle and badgers in some agricultural spaces, whilst in others it recognises the complexity of halting disease flows—largely because any disruption to badgers' ecologies may merely lead to more disease 'accidents'. This spatial duality in which disease vectors can/cannot be excluded, though, is never realistic for farmers who advocate spatial uniformity (ie the elimination of badgers) to solve the problem of bovine tuberculosis. As these attitudes stem from a mistrust of science and government, the paper suggests a role for social science in helping to identify and resolve challenges facing disease control.

Our second group of papers by Henry Buller and Kezia Barker move on to analyse the biosecurities of wildlife. Of course, as Barker and Buller both point out, the classification of these natures as wild is problematic in itself. Buller's paper focuses on the different philosophies of nature in debates between biosecurity and biodiversity. Telling the story of the reintroduction of wolves into the Mercantour National Park, the paper shows how the presence of wolves recasts and re-energises the biodiversity of this Alpine region, prompting the creation of 'wolf spaces' for tourism. By contrast, biosecurity is mobilised as a reaction to the threat of wolves to agricultural and human life. In each perspective, wolves are constructed through a dualistic and fixed conception of nature and its relationship to society. However, for Buller, wolves confuse or interfere with this ordering, generating—just as Hinchliffe and Bingham argue—"complexities ... and pluralities that no single management solution can resolve" (page 1595).

The preceding papers stress the apparent absence of 'knowing indeterminacy' and dualistic approaches to nature in attempts to control biosecurity. Barker's paper, however, highlights a different narrative, at least within New Zealand's biosecurity policies. Barker traces the emergence of gorse as an invasive species, in need of elimination. Through a variety of political rationalities, gorse comes to be recognised as a pest only in certain situations and in certain places. This disrupts the simple view of biosecurity and its failure to effectively secure spatial boundaries. Instead, this alternative approach to biosecurity "emphasis[es] the *spatiotemporal sensitivity and flexibility* of the categorisation process" (page 1606). In part, Barker attributes this to public involvement within biosecurity policy making, but also through the entanglements of gorse with other ecologies which allow gorse to act as a 'nursery plant' and facilitate the regeneration of native forests.

Finally, our remaining three papers explore those biosecurities which take as their primary concern human health. First, Lyle Fearnley traces the development of a specific technology—syndromic surveillance—in order to help specify the configuration of security that emerges in the United States at the start of the 21st century once biological pathogens have been identified as one of the key threats facing the nation. Building on and extending the work of Stephen Collier and Andrew Lakoff, he identifies how the 'emerging infectious diseases worldview' as inflected by subsequent concerns about bioterrorism has served to problematise prevailing ways of doing collective health. More precisely, by following the detail of the simultaneously technical and normative debates within the syndromic surveillance community about what disease events are to be counted as 'significant', Fearnley is able to demonstrate how 'public health' (which takes as its object human populations) has become supplemented with another style of securing life, 'preparedness' that is more concerned with the vulnerabilities of 'critical infrastructures'. His analysis of the 'disjuncture' between these modes of governance, and conclusions about the necessity of making sense of how different biosecurities refigure and relate to each other resonate strongly with other papers in the issue.

In the second paper in the section Claire Major is also concerned with the vulnerabilities of critical infrastructures, but in a way which completely reorients what and where that might mean. Tracing how the attempts to manage 'good' and 'bad' circulations on which neoliberalisms rely is always more or less 'affective' as well as more or less effective, she draws attention both to the sorts of usually invisible working bodies and bodies of work required to keep people moving and healthy, and to the very real risks of ignoring this labour. Thinking through case-study material on the 2003 outbreak of SARS in Toronto using conceptual tools taken from Michael Hardt and Antonio Negri and nonrepresentational theory, Major details how certain affect skills were both 'demanded' of nurses and hotel hospitality workers during the event and then 'dismissed'. Such shifting priorities and practices left such groups both making matters safe at and exposed on the frontline of disease transmission, and thus offer a very vivid example of the simultaneous production of biosecurities and bio-insecurities also touched on in other papers.

In the final paper of the special issue, Estair Van Wagner links the previous two by bringing together the 'preparedness' mode of securing discussed by Fearnley and the Toronto-SARS case study engaged by Major. Her point of intervention, however, is different to both, as she furthers our understanding of the North American 'new normal' through an investigation of the legal instruments and practices involved in attempts to make matters safe in Canada following the outbreak. Once again the multiplicities involved are striking, something as familiar as quarantine rendered newly complex by Van Wagner's analysis of the only partially connected versions of the technique in provincial, federal, and international governments. And yet, she is also insistent that some identifiable patterns emerge from these different enactions and their interferences, (re)distributions of inequality and vulnerability that are indicative of the risks of doing biosecurity in certain ways and not others. In doing so she strongly echoes some of Fearnley's points and especially Lakoff's recently expressed concern that "from the point of view of preparedness, the conditions of existence of members of the population are not a political problem" (2007, page 271).

To conclude this brief introduction, it is worth noting that this collection of papers is published at a particular juncture in the career of biosecurity. As the papers show, whilst something with that name has risen to prominence in many locations over a similar period, it has not been exactly the same thing everywhere. This fact has been widely noted in recent policy dialogue and documents and has prompted a concerted effort across a variety of domains to articulate a unified and universal version of

biosecurity which could be the basis of a standard, worldwide approach to dealing with 'out of place' biological entities of various kinds. From aspirations to see a 'harmonization and integration' of approaches to biosecurity within and between the FAO and the WHO (FAO, 2007), through discussions of 'dual use' research in the life sciences (FAS, 2007), to academic advocates of a 'global biosecurity concert' (Fidler and Gostin, 2008), various attempts at 'joined-up thinking' are gathering momentum all with the aim of bringing the various matters of concern of biosecurity into a single problem space (Collier and Lakoff, 2008). A timely moment then, politically as well as intellectually for a set of arguments that expose the risks of any 'one size fits all' answer to the problematic of what is (or should be) involved in attempts to make matters safe.

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References

Barker K, 2008, "Flexible boundaries in biosecurity: accommodating gorse in *Aotearoa* New Zealand" *Environment and Planning A* **40** 1598 – 1614
Beck U, 1992 *Risk Society* (Sage, London)
Bickerstaff K, Simmons P, 2004, "The right tool for the job? Modeling, spatial relationships, and styles of scientific practice in the UK foot and mouth crisis" *Environment and Planning D: Society and Space* **22** 393 – 412
Braun B, 2007, "Biopolitics and the molecularization of life" *Cultural Geographies* **14** 6 – 28
Buller H, 2008, "Safe from the wolf: biosecurity, biodiversity, and competing philosophies of nature" *Environment and Planning A* **40** 1583 – 1597
Collier S J, Lakoff A (Eds) 2008 *Biosecurity Interventions* (Columbia University Press, New York)
Collier S J, Lakoff A, Rabinow P, 2004, "Biosecurity: towards an anthropology of the contemporary" *Anthropology Today* **20**(5) 3 – 7
Dillon M, 2007, "Governing terror: the state of emergency of biopolitical emergence" *International Political Sociology* **1** 7 – 28
Donaldson A, 2008, "Biosecurity after the event: risk politics and animal disease" *Environment and Planning A* **40** 1552 – 1567
Donaldson A, Wood D, 2004 "Surveilling strange materialities: categorisation in the evolving geographies of FMD biosecurity" *Environment and Planning D: Society and Space* **22** 373 – 391
Enticott G, 2008, "The spaces of biosecurity: prescribing and negotiating solutions to bovine tuberculosis" *Environment and Planning A* **40** 1568 – 1582
FAO, 2007 *Biosecurity Tool Kit* Food and Agriculture Organization, Rome
FAS, 2007 *Case Studies in Dual Use Biological Research* Federation of American Scientists, Washington, DC
Fearnley L, 2008, "Signals come and go: syndromic surveillance and styles of biosecurity" *Environment and Planning A* **40** 1615 – 1632
Fidler D, Gostin L, 2008 *Biosecurity in the Global Age* (Stanford University Press, Stanford, CA)
Foucault M, 2004 *Society Must Be Defended* (Penguin, London)
Foucault M, 2007 *Security, Territory, Population: Lectures at the Collège de France 1977-78* (Palgrave Macmillan, London)
Hinchliffe S, Bingham N, 2008, "Securing life: the emerging practices of biosecurity" *Environment and Planning A* **40** 1534 – 1551
Lakoff A, 2007, "Preparing for the next emergency" *Public Culture* **19** 247 – 271
Latour B, 2003, "Is *re*-modernization occurring—and if so, how to prove it? A commentary on Ulrich Beck" *Theory, Culture and Society* **20**(2) 35 – 48
Law J, 2006, "Disaster in agriculture: or foot and mouth mobilities" *Environment and Planning A* **38** 227 – 239
Major C, 2008, "Affect work and infected bodies: biosecurity in an age of emerging infectious diseases" *Environment and Planning A* **40** 1633 – 1646

Van Wagner E, 2008, "The practice of biosecurity in Canada: public health legal preparedness and Toronto's SARS crisis" *Environment and Planning A* **40** 1647 – 1663

Wynne B, 1996, "May the sheep safely graze? A reflexive view of the expert – lay knowledge divide", in *Risk, Environment and Modernity: Towards a New Ecology* Eds S Lash, B Szersynski, B Wynne (Sage, London) pp 44 – 83