Article

Woven of War-Time Fabrics: the globalization of public health surveillance

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Abstract

This article considers the imbrication of war-time logics with the ideational and institutional development of *public health surveillance*. It suggests that, as the Cold-War-era gave way to the 'age of globalization', public health discourse became less concerned with ideological enemies, and more concerned with ontological enemies. The discourse of emerging infectious disease exemplifies this preoccupation and illustrates how public health surveillance, dominated by war-time logics, is both globalized and predisposed to marginalized local orders of concern. However, at the same time that militarized configurations of public health surveillance set certain tendencies in motion, local orders of concern deconstruct, contest, resist, and negotiate these tendencies. Hence, this article concludes with a call for further empirical attention by Surveillance Studies scholars to the multiplicity of local sites that enact public health surveillance.

Introduction

In 1951 the United States (US) Department of Defense and the US Federal Civil Defense Administration aired a television program entitled *What You Should Know About Biological Warfare*. The program featured Alexander Langmuir, a decisive figure, as it turns out, in the history of public health. In the program, Langmuir presented a scary picture of the precise ways in which biological weapons could be deployed in attacks against the United States. He also made the case for a public health system that could defend against this threat. Elizabeth Fee and Theodore Brown give the following description:

At one point in the program, Langmuir turned on a Waring blender filled with dry ice for a vivid demonstration of how clouds of aerosol mist could contaminate a whole studio and infect everyone inside. He then used a familiar can of insecticide to demonstrate the working of an aerosol spray. Employing much the same principles, he said, an enemy could mount aerosols on airplanes and cover a city with a vast cloud of infectious material. Langmuir also injected colored liquid into a model of the water supply of a city to show how easily a biological warfare agent could spread. How could anyone protect or defend against such an attack? [...] In short, he said, the country needed an epidemic intelligence service ([2001: 722-723](#)).

Langmuir was able to successfully capitalize on fear about biological warfare by capturing the political will and funding for one of the most comprehensive public health surveillance undertakings in the world. His creation of a highly trained cadre of disease detectives, and the institutional apparatus to support them, stands out amongst the achievements in the history of American public health. To some, Langmuir's use of the biological warfare issue to build public health infrastructure amounted to making

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the best of a bad situation.¹ To others, it narrowed the scope of epidemiology to a focus on infectious diseases ‘that were not of any real threat to [the population] outside of their presumptive use as biological weapons’ (*ibid*: 725). Regardless of one’s position on this issue, it is noteworthy that the person who first popularized the use of the term *surveillance* in a public health context should have done so against the backdrop of fears over biological warfare, and in a political context where staunching the spread of communism was every bit as urgent as staunching the spread of germs.

In this article, I argue that the legacy of the association between war and public health is a lasting circumscription of the meaning of *public health surveillance*.^{2 3} While surveillance has long been imbricated with warfare (see, for instance: [Dandeker 1990](#) and [Graham 2006](#)), this association is probably not the first to come to mind when considering surveillance in a public health context. Nonetheless, in line with the view that war is increasingly becoming ‘the general matrix’ ([Hardt and Negri 2004: 13](#)) for a great many social relations, it is possible to see a war-time mentality at work in the backdrop of contemporary articulations of public health surveillance. In pragmatic terms, this engenders a kind of surveillance focused so heavily on disease that the broader determinants of health are left out of the picture ([Krieger 1992; 1994](#)).

In the first section of this article, drawing from the history of the US Centers for Disease Control and Prevention (CDC), I sketch Alexander Langmuir’s creation of the US Epidemic Intelligence Service (EIS), as well as his articulation of surveillance in relation to disease. Additionally, I show how Langmuir’s Cold-War-era definition remains embedded in contemporary articulations of public health surveillance. In the second section, I consider discourse concerned with emerging infectious disease, focusing in particular on HIV/AIDS. This discourse moves the concept of public health surveillance into a new frame of reference, making it at once more expansive and superficial.

With these two vignettes, my intent is to suggest that the concept of public health surveillance is woven of war-time fabrics. The thematic of war, not necessarily just between nation-states, but also between an imagined humanity and an army of microbes, fosters ideational and institutional tendencies towards an all-or-nothing approach to disease.⁴ These tendencies are simultaneously totalizing and reductionist; they admit no nuance. In the final section of this article I argue that such tendencies marginalize *local orders of concern*.

¹ However, see King’s (2005) critique of the ‘dual-use’ rationale for investing in a public health infrastructure oriented towards biodefense.

² I adapt this point about the interconnection between ideational and institutional public health formations from King, who argues that the history of public health demonstrates ‘both the ideological connection between humanitarian concerns, national security, and economic gain, and the sedimentation of these connections into the institutions of state public health and international health’ (2002: 766).

³ This connection was made repeatedly during the Cold-War. For instance, Wald cites a 1951 *New York Times* article informing readers of the possibility that American cities could be enveloped by a dense smog of ‘disease germs’ (2008: 166). The article stated: ‘Despite a grim outline of what might happen, General Creasy declared that the possibilities “are frightening only if we give way to panic or if we fail to insure that we are ahead of any other nation in knowledge and preparedness in this field.” [...] “Biological warfare is essentially public health and preventive medicine in reverse,” General Creasy said. “Except for novel methods of achieving deliberate dissemination of pathogenic organisms, it is a form of warfare which nature has waged against man [sic] for thousands of years and against which modern health practices have produced effective defenses”’ (Anonymous 1951: 18). Additionally, in 1952, the *Atlanta Journal* and the *Pittsburgh Press* each reported Alexander Langmuir’s speculations that their respective cities were ideal targets for an attack using biological weapons. According to Langmuir, the still heat of the Atlanta night created conditions that were favorable for biological warfare because airborne microbes would be kept concentrated and close to the ground for long periods of time. In Pittsburgh, Langmuir listed several possible weaponized agents, including a form of the plague. These speculations, Etheridge suggests, were tempered by Langmuir’s action oriented response: ‘don’t get panicky; get prepared’ (Langmuir, cited in: [Etheridge 1992: 61](#)).

⁴ As a discursive strategy, the idea of an ontological battle against microbes might be a good way to mobilize resources; however, such a position is surely based on a “cursory and superficial understanding of organic materiality” (Hird 2002: 103). It ignores the fact that humans are heavily dependant on ‘their’ microbes for survival (Hird 2009).

I use the phrase *local orders of concern* to broaden the consideration of exactly who, or indeed *what*, is marginalized by war-time logics. The marginalization of patients by medical authority has long been a concern of scholars in the social sciences and humanities (see, for instance, [Illich 1976](#)). My interest here, however, is not only with the marginalization of patients. Their marginalization is bound together with, and compounded by, two other less obvious kinds of marginalization. Hence, I have in mind three related local orders of concern when I consider marginalization. Most obviously, patients are marginalized – or better, *vectorized* – insofar as they are reduced by war-time logics to a matter of association. That is, they are marginalized by processes that reduce them to vectors of disease. In a related vein, just as patients are reduced to a matter of association, war-time logics reduce their microbes to a matter of distribution. The marginalization of these two local orders of concern is problematic because, to the extent that microbial and patient heterogeneity are beyond the scope of surveillance, the public health response tends towards exclusion and control (as opposed to inclusion and care).

However, it is necessary to make a caveat at this point. Exclusionary, control oriented public health surveillance is subject to contestation, not only by patients but also by practitioners. And yet, such contestation, not to mention the nebulousness it produces, is effaced by war-time logics. For instance, war-time logics promoting the use of information technology to automate public health surveillance tend to disregard the labor that makes information technology work. In short, these logics neglect the actual spaces of negotiation and contestation that produce data for public health surveillance. Hence, a third local order of concern – the local, organizational order – is similarly marginalized by war-time logics. I highlight these local orders of concern because the export of ideational and institutional tendencies from the heart of empire promotes their exclusion, thus producing a circumscribed mode of public health surveillance.

The Cold-War-Era: The Development of American Public Health Surveillance

In 1949 Alexander Langmuir left an academic posting at the Johns Hopkins School of Hygiene and Public Health to take up a job at the then fledgling CDC. At the time, the CDC still had a sizeable staff of entomologists and engineers, and was spending about 7 million USD per year spraying DDT in order to control malaria. Langmuir felt that malaria had been eradicated by this point, and that the DDT effort was unnecessary. Suspecting the over-reporting of malaria cases, Langmuir proposed that a four member team be assigned to states with a malaria problem. According to Elizabeth Etheridge (1992) the team was to consist of a nurse-epidemiologist, an epidemiologist, an engineer, and an entomologist. The epidemiologists were to investigate each case, confirming it by laboratory diagnosis. Once confirmed, the engineer and the entomologist would initiate appropriate control measures.

Langmuir's innovation subtly put the emphasis on epidemiological investigation, and changed the case-reporting structure. As Etheridge notes, instead of having doctors report 'the number of cases of malaria they had seen – an easy diagnosis – they had to supply names' ([1992: 33](#)). This new mode of investigation appeared to drastically reduce the number of malaria cases. Whereas in 1947 some 15, 000 malaria cases had been reported, by 1950, under Langmuir's new system, only 55 positive cases were identified ([ibid: 34](#)). Etheridge argues that Langmuir's malaria initiative was the first use of surveillance applied to a disease in the history of US public health. 'Until those first teams went out from the CDC', she writes, 'surveillance in public health meant watching persons who had been in contact with certain serious diseases like plague or smallpox or syphilis to detect the first symptoms so that the patient could be isolated. Beginning in 1950, the term was applied to specific diseases rather than to individuals' ([ibid: 35](#)). This claim rests on a very circumscribed definition of surveillance, which I will discuss below. Suffice it to say here that most surveillance studies scholars define surveillance differently than the way it

is defined in public health discourse.⁵ This is one of the reasons why Langmuir stands out in the history of public health.

In addition to bringing his experience with epidemiological methods and surveillance to the CDC, Langmuir brought experience garnered while serving, after the Second World War, on the US Department of Defense's Committee on Biological Warfare. This position had given him high-level security clearance, and an intimate knowledge of threats posed by biological weapons (Fee and Brown 2001: 722). It also meant that Langmuir was ideally positioned to take a leadership role in America's response to the perceived threat of biological warfare. By 1951, it was the CDC – rather than the National Institutes of Health (NIH) – that had assumed responsibility for protecting against an attack involving biological weapons. The Department of Defense provided the CDC with funding for some of this work, which included the development of air-sampling devices and laboratory techniques for the rapid detection and identification of pathogens. The epidemiological unit was also to play a crucial role in responding to the threat of a biological weapons attack. It would be tasked with correlating air quality findings with observed human illness (Etheridge 1992: 39).

In 1950, the CDC did not have the institutional resources necessary for such an undertaking. However, with the outbreak of the Korean War in June of that year, things began to change. Although the US government ordered all non-defense budgets scaled back, the CDC was able to attract resources for epidemiological work by framing it in terms of 'intelligence' (Fee and Brown 2001: 722). This gave the work of the CDC a covert ring, sexing up the undertaking and attracting a number of physicians to a year-long disease-detective course, instituted in 1951 (Etheridge 1992: 44). By 1952, the Epidemic Intelligence Service (EIS), as the unit came to be known, was in its first full year of operation. It responded to over 200 calls for aid by local public health officials that year. Initially, there was some worry that the CDC's EIS would have some jurisdictional friction with epidemiologists from the NIH. For this reason, Langmuir maintained frequent communication between Bethesda (where the NIH is headquartered) and Atlanta (where the CDC is headquartered). 'To keep everyone informed', Etheridge writes, 'a simple administrative device, the Epidemic Aid Memorandum, was created. The day a request for help came in and a team organized to respond, an "Epi 1" memo was sent to officials with a "need to know"' (ibid: 47).

This historical sketch highlights two key moments in the development of the concept of surveillance in a public health context. First, the idea that surveillance applies to disease, rather than to individuals, distinguishes surveillance, for public health purposes, from control activities. This de-linking of surveillance from control is an ideational innovation that ought to pique the interest of surveillance studies scholars. Thus formulated, surveillance itself takes on an aura of immateriality; this appears to set the stage for its de-politicization. However, the second key moment was, decisively, political. Langmuir's use of defense funding institutionalized a surveillance concentrated on epidemic disease. It was a circumscribed, war-time surveillance, predicated on the immanence of disaster.⁶

This Cold-War-era mark remained in subsequent public health articulations of surveillance, even as the Cold-War faded into the historical background. In 1962, Langmuir delivered the Cutter Lecture on Preventative Medicine at the Harvard School of Public Health. The lecture, which was later published, laid down the basic definition of surveillance in a public health context. Framing his remarks in relation

⁵ Chief among the differences is the distinction drawn between *surveillance* and *screening*. In public health discourse, *screening* refers to the monitoring of an individual while *surveillance* refers to the monitoring of disease trends in populations (see, for instance: Rose 1985).

⁶ In this respect, it resonates with the contemporary orientation towards preparedness. As Andrew Lakoff argues: 'In contrast to population-security-based tasks such as public health provision and poverty relief, preparedness is oriented to crisis situations and to localized sites of disorder or disruption. These are typically events of short duration that require urgent response. Their likelihood in a given place demands a condition of readiness rather than a long-term work of sustained intervention into the welfare of the population. [...] If population security builds infrastructure, preparedness catalogs it and monitors its vulnerabilities' (2006: 272).

to the work of William Farr, ‘that greatest of statistical epidemiologists’ ([Langmuir 1963: 182](#)), Langmuir states:

The term surveillance [...] is not new to public health, but its usual connotation has had application to individuals rather than to diseases. Surveillance, when applied to a person, means close observation to detect the early signs of infection without restricting his [sic] freedom of movement. It implies maintaining a responsible alertness, making systematic observations and taking appropriate action when indicated. It does not involve the restrictions of either isolation or quarantine. Surveillance, when applied to a disease, means *the continued watchfulness over the distribution and trends of incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and other relevant data*. Intrinsic in the concept is the regular dissemination of the basic data and interpretations to all who have contributed and to *all others who need to know*. The concept, however, does not encompass direct responsibility for control activities. These traditionally have been and still remain with the state and local health authorities ([ibid: 182-183](#) - *emphasis mine*).

The italicized words in the above quotation pass into the next generation of definitions in the work of Stephen Thacker and colleagues.

Thacker is currently director of the CDC’s Office of Workforce and Career Development. He also served as an Epidemic Intelligence Officer in Washington, DC between 1976 and 1979. Thacker’s academic work has been instrumental in framing surveillance in public health, both in America and abroad. He has published widely on public health surveillance and is frequently cited. In an article on public health surveillance in the United States, Thacker and his colleague Ruth Berkelman give the following definition:

[...] Langmuir defined disease surveillance as ‘the continued watchfulness over the distribution and trends of incidence through the systematic collection, consolidation and evaluation of morbidity and mortality reports and other relevant data’ and the regular dissemination of data to ‘all who need to know’ ([1988: 164](#) -citation omitted).⁷

Thacker and Berkelman drew this quotation from Langmuir’s 1963 article, cited above, and argued that the concept of public health surveillance has broadened, over time, to include a wider range of health information. However, whereas the range of information collected has broadened, the range of those involved in setting public health surveillance priorities has not. Note which of Langmuir’s words pass into the Thacker-Berkelman articulation of public health surveillance. The continued presence of the (slightly modified) key phrase ‘all who need to know’ raises an interesting set of questions. Who are those who need to know? What do they need to know and why? - Langmuir’s definition included the phrase ‘all who have contributed’, but, by the time Thacker and Berkelman define public health surveillance, these contributors, whoever they may be, are dropped. This is significant, especially as the Langmuir-Thacker-Berkelman formulation is being globalized.

In Canada, for instance, two recent documents define surveillance in a public health context in similar terms. After the Severe Acute Respiratory Syndrome (SARS) outbreak, an expert panel tasked with evaluating the failures of the public health system gave the following definition:

⁷ A very similar definition appears in [Thacker and Berkelman 1992](#), and in [Thacker and Koplan 2004](#). Additionally, similar definitions, but definitions which drop the phrase ‘all who need to know’ appear in: [Thacker et al. 1989](#) and [Thacker 1994](#). In [Thacker et al. 1989](#), the phrase ‘all who need to know’ is substituted for the phrase ‘those who can apply the data to control and prevention programs’ (188). This articulation maintains a distinction between, on the one hand, collection and dissemination of information, and on the other hand, control and prevention.

Health Surveillance may be defined as the tracking and forecasting of any health event or health determinant through the continuous collection of high-quality data, the integration, analysis and interpretation of those data into surveillance products (for example reports, advisories, alerts, and warnings), and the dissemination of those surveillance products *to those who need to know* ([Canada, NAC 2003: 92](#) – *emphasis mine*).

Similarly, the Public Health Agency of Canada, which was created following the SARS outbreak, produced a document to help public health managers evaluate surveillance systems. It states:

Health surveillance can be described as ‘the tracking and forecasting of any health event or health determinant through the continuous collection of high quality data, the integration, analysis and interpretation of ... data into surveillance products ... and the dissemination of ... surveillance products *to those who need to know* [to address] a specific public health purpose or policy objective.’ Health surveillance is an essential component of evidence-based decision making practices ([Canada, PHAC 2004: 3](#) – *emphasis mine*, ellipses and square brackets original, note omitted).

These definitions bear the Cold-War-era mark. As I shall now argue, this mark takes on increasing and changed significance in an era of growing interest in global disease surveillance.

The ‘Age of Globalization’: The Development of Global Disease Surveillance

A war-time ethos characterized the ideational and institutional development of public health surveillance in America. The terms of this war-time ethos, however, have changed. Today’s wars – the war on terrorism is the key exemplar, but it was presaged by the war on drugs, not to mention the war on cancer – admit ‘increasingly little difference between outside and inside...’ ([Hardt and Negri 2004: 14](#)). This seems to be the nature of war within empire. It exists everywhere as a virtuality. In this section I will consider the idea of *emerging infectious disease* as an actualization of this omni-present, virtual war. The enemy, in this formulation, is less clearly human; instead, the enemy is microbial with human characteristics. The archetypal emerging infectious disease is HIV/AIDS, and it is to the story of its emergence that I now turn.

On June 5th, 1981, the US CDC’s *Morbidity and Mortality Weekly Report*, detailed the deaths of ‘5 young men, all active homosexuals’ ([US CDC 1981: 250](#)). As links began to be made between these and other cases, the American media started reporting a gay pneumonia, then a gay cancer, and finally a gay plague ‘when the list of attendant infections grew too numerous to include in a headline’ ([Patton 1985: 5](#)). By 1982, these cases had been drawn together under the rubric of AIDS, Acquired Immune Deficiency Syndrome ([Grmek 1990: 32](#)), a term selected to replace the informally circulating *Gay Related Immune Deficiency* moniker ([Treichler 1999: 27](#)).

Of course, in spite of mainstream, homophobic desires, AIDS was never a disease particular to ‘homosexuals’.⁸ Increasingly, heterosexual and non-sexual behaviors came to be understood as risky. This generalization of the epidemic had several transformative effects. Ilona Kickbusch argues that HIV/AIDS transformed public health into a global endeavour: ‘No longer was there a clear separation between diseases of the rich and poor; the simple division between a developed world with chronic conditions only and a developing world with infectious diseases no longer applied’ ([2007: xi](#)). Moreover, Kickbusch argues, this transformation was accompanied by other dimensions of concern:

⁸ In 2007, the World Health Organization estimated that there were between 30.6-36.1 million people living with HIV ([WHO 2007a; WHO 2007b](#)).

...the rapid spread of HIV/AIDS was no longer considered just a health risk, it was defined as a security concern of global dimensions. National intelligence reports were written on the threat that could emerge from states that collapsed into anarchy due to high rates of the disease and HIV/AIDS was taken to the United Nations Security Council as the first ever health issue (*ibid*: xi-xii).

As Joost Van Loon observes, the cultural politics of HIV/AIDS became the cultural politics of infectious disease. 'From here', he writes, 'it is only a small step to the development of a more general public concern over emergent viruses. AIDS provided merely the index case – a new disease that was unknown, lethal, contagious and globally present' (Van Loon 2002: 137-138).

In 1992, the American Institute of Medicine released a now famous report entitled *Emerging Infections: Microbial Threats to Health in the United States*. The report opens with the following lines:

As the human immunodeficiency virus (HIV) disease pandemic surely should have taught us, in the context of infectious diseases, there is nowhere in the world from which we are remote and no one from whom we are disconnected. Consequently, some infectious diseases that now affect people in other parts of the world represent potential threats to the United States because of global interdependence, modern transportation, trade, and changing social and cultural patterns (Lederberg *et al.* 1992: v).

This situation, according to the authors of the report, makes for a daunting 'battle against infectious disease' (*ibid*: v – *emphasis mine*). Moreover, while drugs, vaccines and pesticides are important 'weapons', their use 'may inadvertently contribute to the selection of certain mutations, adaptations, and migrations that enable pathogens to proliferate or nonpathogens to acquire virulence' (*ibid*: v).

As a consequence, disease surveillance is held to be paramount, and a considerable portion of the *Emerging Infections* report is devoted to the need to strengthen surveillance capacity, both inside and outside of the United States. For instance, the report states: 'The key to recognizing new or emerging infectious diseases, and to tracking the prevalence of more established ones, is surveillance' (*ibid*: 2). Additionally, the 'importance of surveillance to the detection and control of emerging microbial threats cannot be overemphasized. [...] Surveillance is important to any disease control effort; it is absolutely essential if that effort's goal is eradication' (*ibid*: 115). Note the militaristic, all-or-nothing language.

As Nicholas King (2002: 768) observes, this report became the centerpiece of a major global public health campaign. Largely in response to this report the WHO established a special division for communicable disease surveillance. This division was tasked with improving national surveillance systems, as well as coordinating with non-governmental organizations, expert advisors, and collaborating centers. The WHO also initiated the Global Outbreak and Response Network, which was launched in 2000 and which links institutions and coordinates outbreak response (Weir and Mykhalovskiy 2006: 246-247; see also Mykhalovskiy and Weir 2006). These institutional developments have been accompanied by attempts to fortify international law with respect to infectious disease. Exemplary, in this respect, are the new International Health Regulations (WHO 2005).⁹ The adoption of these regulations took on a new urgency in the wake of the SARS outbreak, with many public health experts arguing that they 'were urgently needed to help protect "the global village from pandemic influenza"' (Fidler 2005: 2 -note omitted).

⁹ Surveillance for disease in the global population is a chief facet of the *International Health Regulations* (IHRs). Although the IHRs have a history that can be traced back to the international sanitary meetings that took place in Europe following the 1830 cholera outbreaks, the new regulations depart radically from previous international agreements, including the 1969 iteration of the IHRs. Michael Baker and David Fidler describe this departure in the following terms: 'IHR 2005 [...] strengthens WHO's authority in surveillance and response, contains more demanding surveillance and response obligations, and applies human rights principles to public health interventions. The most dramatic of these changes involves a new surveillance system that far surpasses what the IHR 1969 contained' (2006: 1058).

Although the globalization of public health is laudable, serious ethical and political questions attend the globalization of disease surveillance. Who, for instance, will benefit? Some have argued that these developments are underwritten by the neo-liberal logic of global capital, a war-time logic dedicated above all to flattening barriers that impede the movement of money. The discourse on emerging infections is, for Michael Hardt and Antonio Negri, yet another indication that the crisis of modernity has reached its apogee. ‘The age of globalization’, they assert, ‘is the age of universal contagion’ (2000: 136). Fleshing out their formulation, Alison Bashford notes that globalization and disease management are related in at least three ways. First, travel has increased and accelerated the transborder migration of microbes. Second, information technologies have been used to track disease outbreak regardless of the limitations placed on classical epidemiological methods by international boundaries. Third, the idea of surveillance development ‘as a way to secure disease-free regions’ (Bashford 2006b: 11), now represents the westernization component of globalization. These underlying processes play key roles in the production of anxieties that motivate the desire for an intensification of surveillance.

‘In the emerging diseases worldview’, King argues, ‘American institutions would be both the natural leaders and the most prominent beneficiaries of the creation of a global surveillance network’ (2002: 775). For instance, the CDC advanced a number of objectives aimed at securing the globe against emerging disease. According to King:

...the CDC plan [...] identifies the improvement of laboratory diagnostic facilities and surveillance networks as its first two priority areas. Its stated objective is to replace *ad-hoc* outbreak investigation with a formal, standardized virtual network of data collection and analysis. The CDC would be the source of technology, standards and expertise, creating the computer models and risk-analysis software, furnishing regional laboratories with ‘state of the art’ diagnostics, and training foreign personnel through a series of International Emerging Infections Programs in developing nations (*ibid*: 775).

Crucial, in King’s view, is the integration of global public health with the international pharmaceutical industry. Surveillance helps to secure markets for industry by limiting demand uncertainties (*ibid*: 777).

Post-9/11, this orientation towards limiting uncertainty intensified (King 2003), not just in public health, but in all domains where surveillance could be extended as cold comfort against the generalizing conditions of war (see, for instance: Ball and Webster 2003; Lyon 2003). As King observes, in contrast to the epidemiology of 150 years ago,

...contemporary recommendations favor a form of routinized, computerized global surveillance. This surveillance would be heavily reliant on new information technologies, databases, and molecular epidemiology, and depend on close partnerships between public health institutions, national security agencies, and private industry. Current proposals, arguing that uninterrupted global surveillance is the backbone of public health effectiveness, emphasize the unity of American national security concerns with global health (2003: 439-440 -note omitted).¹⁰

These macro-configurations evince a global political economy and biopolitics of public health surveillance. In the words of Weir and Mykhalovskiy: ‘At issue here are the tactical valences of global public health surveillance in the twenty-first century, specifically whether it will serve the growth of

¹⁰ The *Emerging Infections* report illustrates this orientation towards information technology. The authors of that report expressed frustration that there was ‘no single database from which a physician, researcher, health care worker, public health official, or other interested party can obtain information on disease incidence, antibiotic drug resistance, drug and vaccine availability, or other topics that might be relevant to infectious disease surveillance, prevention, treatment, and control’ (4). Furthermore, they argued: ‘...given the current communications capabilities of personal computers and the relative ease with which information on a multitude of topics can be accessed, a database is not only technologically feasible but could be a valuable addition to U.S. surveillance efforts’ (Lederberg *et al.* 1992: 123).

global democracy and peace in the twenty-first century or the defense and military needs of the Global North' (2006: 257).

In short, the paradigm of emerging infectious disease (re)configures public health surveillance for war-time deployment. Now, however, the struggle is figured less with reference to ideological enemies, and more with reference to ontological enemies. Humanity itself is held to be at stake, and this calls for a globalization of surveillance. At the same time, since the enemy is microbial, this globalized surveillance also attempts a molecular-level gaze. Already, since the 1930s, biology had come to 'visualize life in terms of phenomena at the sub-microscopic region – between 10^{-6} and 10^{-7} cm. Life, that is to say, was molecularized' (Rose 2007: 44). As Nikolas Rose argues, this molecularization amounted to 'a reorganization of the gaze of the life sciences: their institutions, procedures, instruments, spaces of operation, and forms of capitalization' (*ibid* 44). With the globalization of this reorganized gaze, however, the life sciences have been confronted by the law of diminishing returns. Computerized processing power promises to overcome such barriers but, stretched between the global and the molecular, surveillance remains, in the words of Kevin Haggerty and Richard Ericson, 'a mile wide but only an inch deep' (2000: 618).

The visualization of molecular complexity on a global scale is a technocratic dream. It is predicated on the mastering of information, or what Beniger evocatively describes as the 'destruction or ignoring of information in order to facilitate its processing' (1986: 15). Moreover, this dream is given sense by the war-time logics of empire. In the next section of this article I will describe how the macro-configurations of this technocratic dream can marginalize local orders of concern. That is, I will describe how these configurations foster a set of local exclusions and thereby circumscribe public health surveillance.

Globalized, Molecularized Surveillance: Marginalizing Local Orders of Concern

It is not coincidental that, following the emergence of HIV, there was increasing concern with fortifying global surveillance against emerging infectious disease. HIV, after all, appeared to 'attack' the cells of the immune system, making the development of a techno-scientific surveillance apparatus seem the more urgent.¹¹ In 1986, the year of its naming, HIV was described in the following terms:

The invader is tiny, about one sixteen-thousandth the size of the head of a pin... Scouts of the body's immune system, large cells called macrophages, sense the presence of the diminutive foreigner and promptly alert the immune system. It begins to mobilize an array of cells that, among other things, produce antibodies to deal with the threat. Single-mindedly, the AIDS virus ignores many of the blood cells in its path, evades the rapidly advancing defenders and homes in on the master coordinator of the immune system, a helper T cell (cited in: Sontag 1977/1989: 105 -ellipsis original).

There is, of course, a long history of metaphorical tropes that figure the body as a besieged fortress. Susan Sontag suggests that the war metaphor came into wide use, in medical discourse, after the identification of bacterial causes of disease (*ibid*: 66). But, with HIV, the tenor of the discourse changed. In spite of descriptions that figure viruses as simple, their 'activities are far more complex than those envisaged in the earlier germ models of infection. Viruses are not simply agents of infection [...]. They transport genetic "information," they transform cells' (*ibid*: 156). Hence, viral infections seem to call for an

¹¹ At the same time that HIV was compromising the body's immune system, the immune system was being figured in terms of surveillance and defense. Looking at popular accounts of the immune system from the mid-to-late 1980s, Martin observes a dominant theme: the body is recurrently depicted as a 'scene of total war' (1990: 411). In one account, the '...cells and molecules of the defensive network maintain constant surveillance for infecting organisms' (Tonegawa 1985: 72 -cited in Martin 1990: 414). In another account, the body's cells are equipped with '..."proof of identity" – a special arrangement of protein molecules on the exterior...' (Nilsson 1987: 21 -cited in Martin 1990: 421).

intensification of sub-cellular surveillance, and for the deployment of *prefficient* visualizing technologies.¹²

In what follows, I consider Catherine Waldby's (1996) analysis of the biomedical approach to the HIV/AIDS epidemic. Her analysis is instructive because it suggests the ways that larger political tides influence how population-level knowledge about HIV/AIDS is generated. It also suggests how surveillance practices bridge different 'centers of calculation' (Latour 1999: 72), such as the laboratory and the clinic, and how these centers, in turn, reproduce social norms. As such, it suggests how macro-configurations might characterize the way in which local orders of concern are marginalized. Nonetheless, as I will argue, Waldby's critique also needs to be supplemented with attention to local practice. Absent of such a focus, analyses of the macro-configurations of public health surveillance risk participating in the marginalization of local orders of concern.

Waldby's analysis begins with a consideration of the uniqueness of the viral challenge to human identity. Viruses, she argues, can destabilize the ontological status of the human. They can do so because 'viral infection involves the colonization of human genetic identity with viral genetic identity' (1996: 1). Within the logic of war, viruses 'are understood to replicate themselves through their annexation of the reproductive apparatus of human tissue cells, forcing the human cells to manufacture alien viral cells, forcing human identity to participate in its own infectious defeat' (*ibid.*: 1). According to this description, viruses present a particularly insidious challenge to human identity. Waldby argues that, within the binary oppositions established by the war context, medical scientists regard themselves as the true opponents of viruses because only they command the knowledge and technology required to fight them. The capacity to visualize a virus at the molecular level secures the scientist's claim, she contends, to wage war. Moreover, the capacity of HIV to disable the body's defense system, 'rather than engage in honest warfare with the immune system like lesser infectious agents' (*ibid.*: 3), makes more urgent the positioning of biomedical science as the body's second line of defense. To critique this development, Waldby articulates the concept of the *biomedical imagination*, which she defines as 'biomedicine's speculative and explanatory universe' (*ibid.*: 5). I will suggest a critique of this concept below. First, however, let me briefly show how Waldby illuminates the totalizing and reductionist tendencies of discourse dominated by a war thematic.

Waldby argues that biomedicine's control strategies 'do not "target" the virus alone, but rather "target" the person as a viral agent' (*ibid.*: 20). This is a deeply (bio)political practice because it relies on unexamined notions that elide the dynamism of identity in order to intervene in the epidemic. For example, where I live in Ontario, Canada, HIV test requisitions require the collection of information about risk-factors. These include 'sex with women', 'sex with men', 'needle use (injecting drugs/steroids)', 'has lived in endemic area', 'heterosexual partner of a person at risk of HIV (list exposure category of heterosexual partner)', and so on (Ontario, MHLTC 2006). These categories create a risk hierarchy and necessarily figure patients in superficial terms. Similarly, screening regimes make little distinction amongst the myriad different sub-types of HIV. For instance, for the purposes of disease reporting, mandated under the province's Health Protection and Promotion Act, a person either has a positive finding with respect to a listed disease, or does not. The concept of the biomedical imagination illuminates how these techniques prefigure both patient and microbe in a superficial way.

On the basis of such superficial information, Waldby asserts, the biomedical imagination attempts to visualize the body as though it were transparent. The illusion of transparency is achieved by allowing ideal types (superficial information) to stand in for objects. The supposition that biomedicine's superficial information corresponds to its object, the body, 'legitimizes biomedicine's power to diagnose and manipulate its objects, to undertake clinical practices like surgery and public health practices like screening which require the trust and at least tacit consent of its patients and potential patients' (Waldby

¹² Slightly adapting an observation by William Bogard, a *prefficient* technology would be more than efficient – it would eliminate 'problems before they emerge, absolutely, before they even have the chance to become problems' (2006: 60).

1996: 30). The difficulty, however, is that the biomedical imagination makes things up: ‘On the one hand it creates narratives and on the other it *realizes*, or struggles to realize, these narratives through their embodiment’ (*ibid*: 32).

This process of making things up involves judgments about what is normal, and, for that matter, what is healthy. Following Georges Canguilhem, as well as Foucault and others, Waldby asserts:

...any operative concept of health is enmeshed in and partially derived from current descriptions of pathology. This suggests to me that whatever concepts of health are dominant at a particular historical moment can be read as a negative registration of whatever forms of pathology are silent at that moment (*ibid*: 38).

In other words, the normal is always read against a register of the pathological. Additionally, the biomedical imagination organizes the relationship between health (the normal) and disease (the pathological) according to the prevailing social order. This connection between health, disease, and the social order becomes especially apparent under ‘conditions of epidemic’ (*ibid*: 40). These conditions, which are war-time conditions in the discourse of emerging infectious disease, generalize pathology to the group-level. Additionally, they make desirable those discursive techniques which seem to admit clear, concise communication. Perhaps no discursive technique claims more clarity than mathematical expression.

Certainly, mathematical expression founds the disciplines of virology, immunology, and epidemiology. The exemplars of each discipline are articulated with reference to populations (of viruses, of cells, and of mammals). This common foundation enables a reciprocity between each field and ‘means that a discovery in one [field] can be translated easily into the knowledge of the other without distortion or ‘noise’’’ (*ibid*: 98). Here, Waldby is concerned that, in the biomedical imagination, the material heterogeneity of bodies, be they viral or human, is just so much noise, a problem to be filtered out by surveillance infrastructure.

I think Waldby’s critique of the biomedical imagination gives a reasonable picture of how ideational and institutional tendencies might marginalize (filter out) local orders of concern. Insofar as it is plugged into an overarching normative structure, the biomedical imagination is subject to the same sexist, racist, abelist – in short, biopolitical – tendencies that dominate the structure in which it is nested. These structural tendencies characterize and specify the nature of marginalization. The virology, immunology and epidemiology of HIV/AIDS resonate with prevailing ideas about disease in the heart of empire. To put the argument in blunt terms, the biomedical imagination provides the template for reductionism while the political climate determines who (and what) will be reduced.

At this point, however, it must be acknowledged that the biomedical imagination is itself a superficial truth and does not exhaust the reality of biomedical practice. Consequently, although Waldby’s work illuminates the tendencies embedded in the globalization of war-time public health surveillance, there are myriad ways in which people deconstruct, contest, negotiate and resist such processes in practice.¹³ Indeed, to attribute too much power to the biomedical imagination would be to participate in the marginalization of local orders of concern. Just as the biomedical imagination can efface local orders of concern, so too can an overly deterministic understanding of this concept efface patients, microbes, front-line practitioners, and even local, organizational heterogeneity. In fact, however, the marginalization of these local orders is systemic; it is related to the drive of war-time logics that are desirous of controlling information.

The recent shift towards syndromic surveillance illustrates this point. As Lyle Fearnley notes, syndromic surveillance refers to the practice, developed in the 1990s, ‘of monitoring health databases such as ER

¹³ I adapt this point about the local deconstruction of emerging infectious disease discourse from King (2002: 771).

(emergency room) triage logs, 911 (emergency) calls, and pharmaceutical sales' (2008: 1620). Fearnley describes New York City's ER triage chief complaint system as an example of syndromic surveillance:

At the ER, patients report their "chief complaint" – their primary symptom – to the nurse, who enters it into a computer database designed to facilitate the proper distribution of patients in the hospital. The syndromic surveillance system utilizes networked connections to transfer chief-complaint data and geographic identifiers (zip code) from the ER to the health department. Ideally, this transfer takes place in real time, but more often transfers occur in what epidemiologists call 'near real-time': hourly or daily batches. Once inside the health department's computers, chief complaints are automatically translated into standard syndromes: for example, 'coughing' becomes 'respiratory' (*ibid*: 1620).

From this description, it is apparent how such a system could be useful for public health practitioners. The difficulty with syndromic surveillance, however, lies in the attempt to automate decisions about the significance of symptoms. At what threshold does a cough become a respiratory illness? Fearnley suggests that, if this question is algorithmically answered in advance, then the role that remains for local public health practitioners is to follow-up on the signals sent by syndromic surveillance systems.

In short, as Fearnley's incisive research indicates, the rise of syndromic surveillance suggests an inversion of the relationship between public health worker and information technology (IT). This inversion, in turn, raises the provocative question as to whether IT is a tool for public health practitioners, or whether public health practitioners are becoming tools of IT? Questions of this kind would be precluded by deterministic conceptualizations of the biomedical imagination. For this reason, it is important to supplement critiques of the biopolitics of public health surveillance with attention to local practice.

To conclude, surveillance techniques produce information by filtering out information. This is a dual process that necessarily involves *both* a degree of reductionism *and* a degree of totalization. Waldby's concept of the biomedical imagination illustrates how such reductionism and totalization might be specified and characterized by the prevailing social order and according to war-time logics. However, to the extent that it posits a rigid distinction between biomedicine and other local orders of concern, it risks excluding local practitioners from the analytic frame. As a consequence, and in order to fully grasp the systemic nature of the marginalization of local orders of concern by war-time logics, it is necessary to supplement analysis of the biopolitics of public health surveillance with detailed empirical study. This area of research, however, remains under-developed and beckons the attention of surveillance studies scholars.

Conclusion

Humanity's ancient enemies are, after all, microbes ([Garrett 1994: 10](#)).

My goal, in this article, has been to provide sketches that suggest how a war-time ethos pervades both historical and contemporary articulations of public health surveillance. In the first section, I discussed the development of the US CDC Epidemic Intelligence Service. Specifically, I focused on Langmuir's institutionalization of a cadre of disease detectives. I also suggested that this institutional foundation fostered an ideational distinction between surveillance and control. Moreover, this distinction, which is now embedded in contemporary articulations, potentially de-politicizes public health surveillance, thereby restricting participation in the setting of public health surveillance priorities. These institutional and ideational movements evince a desire for clear boundaries, a desire characteristic of war-time logics and emergency-management strategies.

As the epigraph to this conclusion implies, today's enemies are articulated less with reference to ideological difference, and more with reference to ontological difference. This transformation is bound together with processes of globalization and the ideational and institutional construction of empire. It effectively generalizes, normalizes, and even naturalizes the state of war, making it the rule rather than the exception ([Agamben 2003/2005](#)). At the same time, it fosters a globally intensified, superficially molecular surveillance. This surveillance is increasingly computerized and automated. Taken together, the vignettes of sections one and two of this article show the imbrication of public health surveillance with war-time logics.

In the final section, I focused on Waldby's critique of the biomedical imagination. Her critique indicates some specific ways in which surveillance is connected to the larger normative order, thus showing how this normative order might characterize and specify the nature of marginalization experienced by local orders of concern. Specifically, it illustrates how the techniques of virology, immunology, and epidemiology can resonate with each other in a normative 'surveillant assemblage' ([Haggerty and Ericson 2000](#)). When these techniques are enveloped by war-time logics, the perception of crisis exaggerates their truth-making capacity. Ironically, the attempt to discover global truths about disease eclipses the multiplicity of local truths that are produced in the embodiment of health and illness. Consequently, a concept of public health surveillance that is woven of war-time fabrics produces a garment that is ill-suited to local needs.

There is a catch, however, in this analysis. It risks participating in the marginalization of local orders of concern. I have deliberately argued that scholars must be attentive to local orders of concern, eschewing the less cumbersome, more classically sociological, assertion that scholars must be attentive to patient concerns. Coming out of sociology, I take attention to patient concerns for granted. My choice, however, to focus on local orders of concern, is motivated by the belief that the marginalization of patients is bound together with a more systemic form of marginalization, and that this, in turn, potentially forecloses alternative ways of thinking about health and illness.

This systemic form of marginalization has to do with institutional and ideational tendencies that play upon a tension inherent in public health work. As public health practitioners negotiate their dual responsibility to individuals and the collective public, the nature of this public looms. Who is this public? This question is of a piece with another unanswered question: who are those who need to know?

Operating according to war-time logics, it would seem that those who need to know are, increasingly, those powerful few who possess the technological capacity and know-how necessary for plugging into global circuits of disease management. They are exemplified by the quintessential figure of the technocrat. But this figure, too, is an ideal type. It is a macro-configuration that is deformed by everyday practice. For this reason, an adequate theorization of public health surveillance must be locally,

empirically situated. Alexander Langmuir himself suggested a good entry point for empirical study by including, in his definition of surveillance, the idea that it should involve ‘all who have contributed’. Although this idea was subsequently dropped, it is a thread that may now be picked up by surveillance studies scholars interested in expanding ‘those who need to know’ to include those who have contributed by being surveyed.

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