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Dark Winter and the Spring of 1972: Deflecting the Social Lessons of Smallpox

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This article examines how the master status of bioterrorism has distracted professional and political attention from the social lessons of smallpox. I illustrate this by comparing an influential bioterrorism simulation known as Dark Winter with the social history surrounding the Yugoslavian smallpox epidemic of 1972. Dark Winter's epidemiological premises were largely based upon what was learned from the Yugoslavian outbreak. Yet, although this epidemic was non-deliberate, the exercise did not attend to the social conditions within which it developed. Most notably, it did not consider that this epidemic was mainly borne by marginalized communities of Kosovan Albanians and that difficulties in controlling it were linked to the relative lack of pre-existing public health infrastructure among these people; instead, the Dark Winter exercise mainly focused upon the proximate determinants of violence and its immediate management. This distraction from the social dynamics of infectious diseases has major implications for the prevention and management of future outbreaks, regardless of whether or not they are deliberately initiated.

Key Words: biological warfare; bioterrorism; biosecurity; smallpox; yugoslavia; critical medical anthropology

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INTRODUCTION

If fear is the defining feature of terrorism, then smallpox is already a proven weapon. Smallpox combines the worst fears of infectious diseases with those of organized violence. These fears partly stem from its long and sordid past. Smallpox was a major contributor to human mortality for thousands of years—and this includes its role in the decimation of indigenous populations and an estimated 300 million deaths in the 20th century alone (Dobyns 1993; WHO 1980). Smallpox also threatens physical disfigurement, a stigma that exaggerates the perceived risks of other diseases, such as leprosy (Silla 1998). Moreover, the potential re-emergence of smallpox entails a direct indictment against a human agent. Variola has not been seen outside a laboratory since 1977.[1] Future detection would therefore be contingent upon the release of the virus from an artificial stock, either by accident or by intention.

These fears aside, however, it is questionable whether smallpox would make an effective bioweapon. The virus is restricted to human hosts, outside of which it is vulnerable to environmental degradation (Mack 2003). Transmission by respiratory droplets and casual contact is problematic (Fenner et al. 1988). In one of the best precedents for the spread of smallpox in an unvaccinated population, an outbreak in southeastern Nigeria revealed a modest rate of transmission, mostly through close contacts, in close quarters, and *after* those infected had presented with a characteristic rash (Eichner and Dietz 2003). This explains why, in the 51 reimportation epidemics since the Second World War, most infections were restricted to patient care settings (Mack 1972).[2] Finally, it is important to note that, for at least a century before its eradication, smallpox was mainly a disease of poverty.[3] A smallpox weapon would therefore target the same socioeconomic conditions from which its violence is likely to emerge. Yet despite these disabilities, smallpox has been a major focus in the recent surge of professional and public discourse on biosecurity[4] and bioterrorism, especially in the United States (Henderson et al. 1999; O'Toole 1999; Alibek 2001; Alibek and Handelman 2001).

This article critically examines the representation of smallpox as a bioweapon in an influential bioterrorist exercise known as Dark Winter and compares it with the social history of an outbreak upon which the key assumptions of this exercise were based—the Yugoslavian smallpox epidemic of 1972. While focusing upon

issues of emergency vaccination and the threat of alleged Iraqi weapons of mass destruction (WMDs), the Dark Winter exercise largely ignored key factors that contributed to the severity of the Yugoslavian outbreak: the social marginalization of the Kosovan Albanians and their relative lack of public health infrastructure. The absence of such information in a high-profile exercise illustrates how the violence of bioterrorism can deflect professional and political attention from social lessons regarding the spread of infectious diseases. Building upon an interactionist theory of master status and social stigma, I argue that the label of bioterrorism distorts perceptions of disease risk in the same manner that other socially charged labels distort people's perceptions of one another. These perceptions are having a strong influence upon American and international health policies.

THE DISTRACTED GAZE

To better examine the representation of smallpox as a bioweapon, it is important to consider some of the ways that violence, whether threatened or executed, can influence public perceptions of risk. The mark of organized violence has a powerful ability to distract attention from the socioeconomic conditions under which it is propagated. The violence of civil war in Haiti eclipses the slow, steady deaths attributable to structural inequality among its impoverished majority (Farmer 2003, 2004). Images of smart bombs displace the deaths of a half million Iraqi children (Ali, Blacker, and Jones 2003). And the world is just awakening to genocide in Sudan, after years of ethnic conflict, displacement, and poverty (Mans 2004). In all these cases, episodic and structural violence reinforce each other by severely limiting human agency and essential resources for well-being. Yet both will persist as long as poverty continues to hide in plain view.

Public attention is further distracted when violence is labeled as ''terrorism.'' This label exerts a powerful master status effect—a phenomenon that occurs when a socially discredited attribute distorts the status of a person or group to the exclusion of all other features (Goffman 1963; Hughes 1945; Jones et al. 1984). Master status labels can be found throughout medical anthropology: in the stigmatization of disease conditions (Ablon 2002; Farmer 1999), the legitimation and delegitimation of sick roles (Friedson 1979;

Kleinman 1992), and the unequal provision of health care resources (Risse 1988; Larme 1997). The social consequences of these distortions can have adverse health effects more generally (Berkman and Syme 1979; Seeman et al. 1987) as well as positive (i.e., exacerbating) effects upon the epidemiologies and trajectories of particular diseases (Barrett 2005; Dressler 1993). For these reasons I have argued that disease discrimination is itself an illness, inclusive of its marked physical conditions (Barrett 2005).

I would argue that the master status of ''terrorism'' is also inclusive of the physical conditions it represents, for the label distorts not only the representation of people, but also the principles and hazards surrounding the violence itself. As such, it impedes efforts to prevent such actions or to minimize their consequences. This is illustrated by dangerous disparities between perceived and actual risks among Americans following the September 11th attacks (Gray and Ropeik 2002). Airline travel dropped 18 percent during the last quarter of 2001, while many Americans faced higher risks for injury and death on the highways (Sivak and Flannagan 2003). Comparing motor vehicle fatalities for that period against a (relatively stable) rate from the previous five years reveals 353 excess deaths, more than the 266 passengers and crew killed in the 9/11 hijackings (Gigerenzer 2004).[5] In the wake of the anthrax mailings, thousands of people contributed to the emergence of antibiotic resistance by taking broad-spectrum antibiotics in the absence of symptoms or known contacts (Navas 2002; Shaffer et al. 2003). Ironically, 2001 saw no significant increase in flu vaccinations among Americans over 65 years of age, despite the fact that influenza posed greater risks than anthrax (Sherman 2001). These examples illustrate how the fear of terrorism can produce casualties in addition to, and perhaps greater than, the attacks themselves.

The master status of terrorism does not diminish for want of a clear and common definition. On the contrary, the ambiguity of ''terrorism'' allows people to associate the label with whatever they may fear or hate without reflecting upon its definition (Keeley 2002). These associations are learned early, as evidenced by the use of the term ''terrorist'' in racial stereotyping among New York schoolchildren (Kromidas 2004). It also creates a space for historical revision, such as attributing 9/11 to fiscal problems that existed before the attacks (Brash 2004). Such examples are consistent with studies of other poorly defined yet socially charged labels that

allow room for the morbid imagination as well as for reassigning and objectifying meanings into new social realities (cf. Berger and Luckman 1966; Barthes 1972; Orwell 1970 [1946]).

Combining the terrors of ''terrorism'' with those of contagion and biotechnology, the specter of ''bioterrorism'' threatens to further obscure the view. From poisoned wells to recombinant bacteria, the deliberate use of disease against human populations has a long history (Mayer 2003; Moreno 2001). Yet the existence and use of these weapons has only recently entered into Euro-American discourse (Guillemin 2004; 2005). The situation is akin to that of the ''emerging'' infectious diseases of the 1990 s, which had more to do with an emerging awareness in affluent societies of long-standing global health problems than with the spontaneous emergence of new organisms (Farmer 1996). Unfortunately, much of the American attention at that time was focused upon ''virus hunters'' in spacesuits and the pathogens themselves rather than the conditions of poverty, social inequality, and ecological disruption under which these diseases flourished (Barrett et al. 1998). Therefore, the label ''emerging infections'' exerted a dominant effect over the sociohistorical aspects of these marked conditions, thereby illustrating how master status labels can distort human perceptions of risk and the environment, just as they distort human perceptions of one another.

An expanded theory of master status predicts that the representation of infectious diseases as bioweapons will emphasize violence—both of the pathogens and of those who deliberately wield them—to the neglect of other characteristics, such as the social environments within which these diseases are likely to be prevented, propagated, or brought under control. Because of its central position in the American discourse on bioterrorism, smallpox is ideally suited for testing this prediction. The representation of smallpox as a bioweapon in the Dark Winter exercise is also ideal because of that simulation's political influence and professional authority. The extent to which ''Smallpox: The Weapon'' may deflect an understanding of ''Smallpox: The Disease'' is illustrated by comparing its representation in Dark Winter with the 1972 Yugoslavian epidemic (from which that exercise's key assumptions were derived). As we will see, the social history of smallpox in 1972 Yugoslavia holds important lessons for the control of infectious diseases after 9/11, regardless of whether or not the diseases are deliberately initiated.

DARK WINTER

The Dark Winter exercise of 2001 is one of the most influential of simulated models for a deliberately engineered infectious disease pandemic. Conducted by major public figures in the months prior to the 11 September and anthrax attacks, Dark Winter quickly became the reference scenario for understanding the threat of bioterrorism. Shortly after the exercise, participants testified about its lessons before the U.S. Congress, and their briefings for the U.S. vice-president and national security advisor brought support for a proposed national smallpox vaccination campaign (<http://www.sourcewatch.org>). More recently, one of the organizations that developed Dark Winter has been selected to operate the U.S. Homeland Security Institute, ''to provide independent analysis . . . on matters related to policy and security where scientific, technical, and analytical expertise is required'' (Department of Homeland Security 2004). Many of the people involved with Dark Winter are currently shaping U.S. policies regarding national security, civil rights, and domestic and international health.

Dark Winter was designed as a ''senior level war game'' to simulate a series of National Security Counsel (NSC) meetings in response to three covert smallpox attacks on the U.S. population (O'Toole, Mair, and Inglesby 2002). Participants included former senator Sam Nunn (as the president), Governor Charles Keating of Oklahoma (as himself), the former directors of the CIA and the FBI (in their previous roles), and eight other major figures in the military, government, and national press. These players met three times to decide upon a variety of national and local responses to the simulated epidemic as it developed over a two-week period.

The Dark Winter epidemic began with multiple covert smallpox attacks in the shopping malls of Atlanta, Philadelphia, and Oklahoma City. From this point, the epidemic developed according to several key assumptions. First, it was assumed that three grams of aerosolized virus would result in 3,000 initial infections. Second, a 1:10 transmission rate was estimated based upon 20 percent herd immunity and data from 34 European reimportation epidemics from 1958 to 1973, including the Yugoslavian epidemic of 1972. Third, these infections were to have a 30 percent mortality rate. Finally, it was assumed that only 12 million doses of smallpox vaccine would be available, due to 20 percent attrition of known stocks (O'Toole, Mair, and Inglesby 2002).

Of course, the players did not know these assumptions. They were briefed in a manner appropriate for their respective roles according to the available evidence at Days One, Six, and Thirteen following confirmation of the index cases.[6] On Day One there were 50 known and suspected cases of smallpox in Georgia, Pennsylvania, and Oklahoma. The participants were also given a basic overview of smallpox and its history. The emphasis, however, was on the worst-case dynamics of the disease. While addressing the inadequacy of U.S. hospital infrastructure, previous instances of quickly contained epidemics were not highlighted as positive examples for primary health prevention (Johns Hopkins Center for Civilian Biodefense et al. 2001). Moreover, the participants were not given the specific historical contexts within which the disease had spread so differently in the decades prior to worldwide eradication.

Then again, such information would not have been typically provided in these kinds of meetings. After all, this was supposed to be the NSC. It was therefore expected that the attention of the participants would be focused upon worst-case scenarios within the cultural category of ''national security'' (read violence). Along these lines, the participants were briefed on a variety of military situations around the world. These included information that Iraq was suspected of having recently increased its production of bioweapons following the lifting of U.N. sanctions and the ceasing of the enforcement of ''no-fly zones'' (Johns Hopkins Center for Civilian Biodefense et al. 2001). The briefings strongly implied that Iraq had used a weapon of mass destruction against the United States.

Based upon available data, the first NSC meeting was convened to decide upon a plan for: (1) vaccination and isolation of suspected cases; (2) the dissemination of information, if any, to the public; and, (3) a possible military response. The NSC members decided upon a ring vaccination strategy, which involved isolating and contact tracing known and suspected cases as well as vaccinating those cases and their contacts (including healthcare and public safety personnel), for a total expenditure of approximately one million doses. The members also decided to inform the public immediately in order to ensure better trust and cooperation. An additional carrier battle group was sent to the Persian Gulf.

On Day Six the NSC members were informed that there were 2,000 reported or suspected cases in 15 states, with 300 deaths. Schools were closed in all states and public gatherings were restricted in affected areas. Many international borders were closed to

U.S. trade and visitors, and the country was beginning to experience food shortages due to the closing of retail businesses. The NSC let individual states decide about isolation policies and the use of the National Guard, a decision that was perhaps reflective of the U.S. southern democratic emphasis on the autonomy of individual states. Three U.S. drug companies were mobilized to produce six million doses within the next month, and Russia donated four million additional doses. The ''president'' made an appeal for people to work together.

Thereafter, the situation declined precipitously. By Day Thirteen the epidemic was well into its second generation of cases, with 16,000 reported infections and at least a thousand deaths. All U.S. vaccine stocks were depleted and at least ten countries had reported unknown numbers of cases. The NSC members were told to expect 17,000 additional cases in the next 12 days, for a total of 30,000 second-generation infections and 10,000 deaths. Those numbers were expected to increase by tenfold for each additional generation thereafter. The exercise concluded at this point, leaving the participants with the strong impression that they had done little to contain a global disease emergency.

The Dark Winter exercise presents several issues for critical analysis. Perhaps the most obvious of these is its suggestion of an Iraqi attack, which brought a particular political agenda to the exercise and ran the risk of discrediting other lessons should it later be proven false (which it was). Perhaps more important, this scenario raised the question of whether a different kind of trigger would have changed the resultant epidemic. Does smallpox spread any differently through human populations when initiated by a rogue state rather than a disgruntled lab worker or an unforeseeable accident? Perhaps not, given that the key epidemiological assumptions of Dark Winter were based upon unintended outbreaks prior to worldwide eradication. Yet it would have been difficult for the participants to address such a question, for the requisite details were absent from the Dark Winter briefings.

Nevertheless, one could argue that historical details would not be immediately useful in the heat of biowarfare. The best approximation of a real-world scenario would require that a great deal of information be presented in a short amount of time. While academically interesting, the lessons of history might have been less pressing than the logistics of vaccination or the situation in Iraq. Moreover, for reasons of better preparation, it makes sense that the Dark

Winter organizers would frame the exercise as a worst-case scenario, such that its epidemiological premises would be based upon the largest of the known reimportation outbreaks, as was the case in Yugoslavia. But if the relative extent of these epidemics was related to differences in their prevention and management, then might these differences hold similar lessons with regard to the prevention of, and response to, a bioterrorist attack? Might these lessons help us to avoid known mistakes or to avoid the reinvention of effective procedures? If so, then this information would likely save time and increase the efficiency of an initial response. The lessons of Yugoslavia and other countries should therefore have been a high priority for the Dark Winter participants. Consequently, the absence of critical information in Dark Winter demonstrates how, at the highest levels of professional and political discourse, the master status of bioterrorism can distort the representation of disease risk.

THE YUGOSLAVIAN SMALLPOX EPIDEMIC OF 1972

Most epidemiological models for the re-emergence of smallpox come from the so-called ''reimportation'' outbreaks in the decades just prior to its worldwide eradication (cf. Mack 1972). These involved infection by people traveling from endemic (and usually poor) societies to those (usually affluent) societies in which the disease had been eradicated for some time. Of all these reimportations, the Yugoslavian epidemic of 1972 is usually noted for the high number of infections (174) caused by a single asymptomatic carrier in a relatively well vaccinated population (Fenner et al. 1988). The story usually ends here. However, field observations of the Centers for Disease Control (CDC) surveillance teams provide further insights into the challenges of smallpox prevention and containment at this particular place and moment in history (Center for Disease Control 1972).

It should first be noted that the burden of this ''Yugoslavian'' epidemic was mainly borne by the people of Kosovo, comprising 5 percent of the national population and 71 percent of the total cases. Predominantly settled by ethnic Albanian Muslims, the region of Kosovo endured a long history of discrimination and oppression by the Serbian majority government. As a result, Kosovo lagged far behind the rest of the country in the number and quality of its health clinics as well as in its roads and communication infrastructure. All

major medical laboratories were based outside of Kosovo, and they rarely sent detection teams into this province. The Yugoslavian government did not report its smallpox vaccination statistics. However, village surveys indicated that as much as 30 percent of the Kosovo population was unvaccinated.

The index case involved a 35-year-old Albanian man (IH) who had just returned to Kosovo in February from a pilgrimage to Mecca. The government knew of the health risks posed by this scale of international pilgrimage, but its border detection efforts were focused entirely on a single disease—cholera—following the El Tor outbreak in 1929. In the weeks following his return, IH is thought to have infected 11 people without developing the disease himself. Yet it is also interesting to note that none of the 37 bus passengers with whom IH traveled were infected, nor was any of the 21 members of his household, including his unvaccinated children. Even in these vulnerable and tightly knit communities, smallpox remained a haphazard affair.

The first patients were hospitalized on 9 March 1972. The first smallpox case was confirmed five days later. The government mobilized surveillance and vaccination teams the following day, along with 45,000 of its one million vaccine doses. But 40 of these 65 teams were regular army personnel, few of whom were trained in proper vaccination technique or spoke Albanian. They attempted a ring vaccination strategy, but the requisite contact tracing proved ineffective as few Kosovo Albanians trusted the government enough to disclose their associations. People did not believe that smallpox had returned after more than forty years. Smallpox vaccine was thought to induce abortions, so when the soldiers began vaccinating pregnant women, many people suspected that this was a government plot to exterminate the Albanian people. Unfortunately, history would later prove that these concerns were not far off the mark.[7]

With the failure of ring vaccination, the army began surrounding and vaccinating entire villages. They forcibly isolated suspected cases and contacts in makeshift hospitals and camps. More vaccine was on the way when the second generation presented symptoms. However, when it turned out that 29 of the 142 second-generation cases were in the capital city of Belgrade, the vaccines were quickly rediverted back to the Serbian center. Even then, most of the remaining stocks were held in reserve, presumably for more essential personnel. A centralized authority had set national priorities based upon its own provincial interests.

News of the epidemic brought strong international support from both sides of the Iron Curtain. With the help of visiting medical workers and imported vaccines, Yugoslavia conducted a successful mass vaccination campaign for all its 21 million people. The final toll of the epidemic was 174 reported cases and 35 deaths. Fortunately, the crisis resulted in only one exported case—one small consolation for a relatively closed society.

The Yugoslavian epidemic marked the worst smallpox reimportation in Europe since the Second World War (Mack 1972). There are good reasons to expect that, were it not for outside assistance, Yugoslavia would have continued along the path predicted by Dark Winter. Within the limited options for their allocation, it would not have been long before vaccine stocks would have been depleted and the military overwhelmed. The number of infections would have increased tenfold with each generation, and smallpox would have eventually crossed international borders, creating more epidemics, and so on.

Yet the social history of the Yugoslavian epidemic also shows that its severity was not a simple matter of inadequate vaccine stocks or training. First, as was suggested by the Dark Winter exercise, the government needed the local support of trained first responders to contain the epidemic in its early stages. However, the government could not rapidly develop this level of support without the pre-existence of a locally adequate public health infrastructure: primary care clinics and laboratories as well as better systems of communication and transportation. One cannot have a ''surge capacity'' for epidemics if there is nothing to ''surge'' with in the first place. Yugoslavia was generally known for having the infrastructure to support this capacity at the time, but these resources were mainly concentrated in large urban centers among the Serbian majority population (CDC 1972). The epidemic would have been better managed had there been a more equal distribution of these resources.

Second, this relative lack of local public health resources was bound to affect community support, especially in such a socially marginalized population as that of the Kosovo Albanians. Given long-standing ethnic tensions and distrust of the national government, one could hardly expect these communities to work with non-local institutions that had previously paid little attention to their needs, especially when those institutions were largely comprised of Serbian soldiers. Support would have been best achieved

by a well established network of local public health providers, people who had an established relationship with their communities based upon years of health promotion and healing. Such relationships have been credited with the success of previous smallpox eradication campaigns, such as those in Central and West Africa (Fenner et al. 1988).

In the absence of such relationships, it was difficult to achieve adherence to an emergency vaccination campaign, especially when it involved the collection of accurate and thorough contact information at a rate that would outpace the spread of the virus. Because of these informational needs this so-called ''race to trace'' depended as much upon the rate of human cooperation as it did upon viral replication (cf. Kretzschmar et al. 2004). As we saw at the beginning of this article, the replication rate of Variola is still a matter of debate. But the social history of the Yugoslavian smallpox epidemic leaves little doubt that the rate of cooperation among the Albanian Kosovans was nearly non-existent. Public distrust had impeded disease containment at the earliest stages of the epidemic, thereby necessitating a national mass vaccination campaign at its later stages. Nevertheless, issues of public trust were not incorporated into the vaccination parameters of Dark Winter; rather, it was the non-immunity of the population, and the availability of vaccines themselves, that were limiting factors in the failed vaccination efforts during the exercise.

Third, Dark Winter assumed that smallpox would spread through an unstructured population, one in which an infected person was equally likely to transmit the virus to anyone else in the population. Yet the Yugoslavian epidemic occurred in highly structured circumstances, in which certain people were at greater risk for infection than were others. Kosovans were more likely to be infected than were Serbs, while the latter were more likely to receive vaccination and treatment (CDC 1972). Smallpox did not spread evenly throughout Yugoslavia. It was channeled according to particular social relationships as well as through more general patterns of social inequality. In recent years, such structures have been typically (if crudely) incorporated into stochastic models for infectious diseases (Eichner and Dietz 2003; Kretzschmar et al. 2004; Porco et al. 2004). Based upon the historical lessons of Yugoslavia, they should have been incorporated into Dark Winter. If they had been, then the exercise would have underscored a recurring theme in the unnatural history of human infectious diseases: that

those who are at the highest risk during epidemic emergencies are those who are at the highest risk for health problems at any other point in time (Barrett et al. 1998). Consequently, an effective emergency response system would be closely linked to an effective system of primary prevention, with special attention paid to those who need it the most.

Finally, there is the matter of bioterrorism. No fanatics or rogue states were responsible for initiating the Yugoslavian epidemic. It simply began with one man's excursion through an increasingly globalized disease ecology. Nevertheless, its epidemiological consequences became the model for one of the most influential bioterrorism scenarios in American policy today. Given the historical basis of this exercise, it follows that the preparation for a deliberate infectious disease epidemic should be much the same as that for a non-deliberate epidemic. We can expect to learn more from the unnatural history of human diseases than just their epidemiological outcomes. Yet this did not happen in the case of Dark Winter. Even though the Yugoslavian epidemic held key lessons for the prevention and management of smallpox and other infectious diseases, these lessons were deflected by a selective focus on viral pathogens and human violence. History has yet to surpass the master status of fear.

CONCLUSION

Although the Dark Winter exercise was thin on historical information, it should be noted that many of its participants were sensitive to the societal implications of a smallpox epidemic. This is evidenced by their testimony before the U.S. House Subcommittee on National Security, Veterans Affairs, and International Relations (Committee on Government Reform 2001). In addition to the predictable calls for increased vaccine production and further biomedical research, they made several recommendations in light of the social challenges of effectively responding to a sudden infectious disease pandemic, which I summarize as follows:

1. That there be greater investments in public health, first responder, and biomedical resources with the surge capacities to deal with a major infectious disease emergency.
2. That these resources be coordinated at all levels of government rather than simply under an overarching federal umbrella.

3. That federal and state laws be updated to balance the interests of epidemic control with those of civil liberties.
4. That government leaders avoid the temptations of secrecy and work with the media to provide candid and timely information to ensure the trust and cooperation of the public.

While these recommendations certainly resonate with current academic and public policy debates, they have had little impact on current U.S. government decision making, at least when compared with the alarm raised by the exercise itself. Most of these issues were never incorporated into the Dark Winter problem in the first place. This being the case, the efficacy of the recommendations remained untested. One could therefore imagine a different set of conclusions—such as the need for a new federal agency or increased authority for covert intelligence—had the exercise been recast with a different set of participants. Indeed, one need not imagine these alternatives at all: they are currently reflected in U.S. governmental policies. Like ''terrorism'' and ''bioterrorism,'' the terms of Dark Winter are open to multiple interpretations. Yet, the more socially oriented interpretations of the exercise are eclipsed by the master status of a deliberately destructive act. Had it provided more briefings on known epidemics than it did on suspected murderers, and had it incorporated this information into the differential development and control of the disease, then the exercise itself could have spoken to the broader social issues of infectious diseases.

In the same manner that the episodic violence of 2001 distorted perceptions of individual risk, the collective fear of bioterrorism threatens to increase health risks by narrowing the scope of prevention and response to infectious diseases overall. It is not the first time that Americans have encountered this problem. Citing the development of the CDC's Epidemiology Intelligence Service (EIS) during the Cold War, McDade (1999) promotes a ''value added'' approach to biopreparedness that improves public health infrastructure overall while simultaneously addressing national security concerns. It should be noted, however, that the McCarthy-era development of the EIS as civil defense came at the expense of other programs for chronic diseases, toxic hazards, and infections considered unlikely to be used as bioweapons (Fee and Brown 2001). Diminished support for these latter programs resulted in a greater susceptibility to all manner of infectious diseases (Barrett et al. 1998; Garrett 2000).

Currently, history is repeating itself with the further militarization of American public health, shifting attention and resources towards the threat of deliberate human infections at the expense of more general surveillance, prevention, and treatment programs (Cohen et al. 2004; King 2003). In a survey of 539 local public health agencies, 53 percent reported that bioterrorism preparedness diverted significant resources away from such public health activities as prenatal care, STD prevention, and school immunization campaigns (National Association of County and City Health Officials 2003). Public research funds are primarily geared towards investigations of intrinsic pathogen characteristics and the development of antimicrobial drugs (cf. Center for International and Security Studies at Maryland 2006). Finally, surveillance efforts are emphasizing domestic over international epidemics, despite the porous nature of national borders when it comes to infectious diseases (Chyba 2001).

Farmer (1996) warns of pandemic consequences when political boundaries are more permeable to health problems than are the resources with which to solve them. The same could be said of cognitive boundaries between the problems themselves. As an example, the Homeland Security Institute Web page highlights ''dual benefit solutions'' that ''enhance the security of the [United States] while promoting some other public good'' (<http://www.homelandsecurity.org>). Yet basic health prevention programs are absent from this list of detection devices and shelters, whose ''dual benefits'' are not immediately obvious. It is a significant omission, given the power of this organization to define the intersections between biopreparedness and public health, especially when federal spending is curtailed for health research programs ''not related to national security'' (Office of Management and Budget 2002).

It is ironic that the most influential designers of Dark Winter did not heed the key testimony of its senior-level participants, which calls for increased public health and safety expenditures as well as measures to ensure public trust and cooperation. These recommendations speak as much to the world after September 11 as they do to the Yugoslavia of 1972. Both histories address the need for improved public health infrastructure, greater socioeconomic equality, and transparency in government. If these historical parallels were better known, then biopreparedness could be better linked to primary prevention, and a wider scope of attention could be trained upon the social lessons of all infectious diseases, including those related to bioterrorism.

This is an important lesson for medical anthropologists as well. Just as Friedson (1979) describes the imputational power of medical experts who ''create illness much as lawmakers create crime,'' we now observe (and are observed by) a new generation of bioterrorism specialists with the power to define and shape the overlapping domains of public health, human rights, and international security. While understandably reticent to engage in these discourses, medical anthropologists are well positioned to bring them into critical, historical, and ethnographic relief. Indeed, it is our responsibility to do so, lest we default a broad range of human issues to a narrow scope of attention. The status of ''terrorism'' has no force without imputation.

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NOTES

1. The last reported case of human-transmitted smallpox occurred in Somalia in 1977. An additional case occurred in 1979 as a result of laboratory exposure (WHO 1980).
2. The modest rate of smallpox transmission has also been used to explain why surveillance-containment methods (selective vaccination of known contacts) successfully outpaced the spread of smallpox in West and Central Africa (Foege, Millar, and Henderson 1975; Foege 1998). There has been some recent debate on the efficacy of surveillance-containment in West and Central Africa. The focus of this debate concerns the rate at which smallpox can spread from person to person (also known as the reproduction number, or R_o). Kaplan and Wein (2003) argue for faster replication based upon a longer prodromal period and transmission within an unstructured population (where the likelihood of all possible contacts is equal).

But others regard this model as simplistic and contradictory to the established success of the West and Central Africa programs, in which eradication was achieved well below any reasonable threshold of herd immunity (Enserink 2003). The latter argument is also supported by several recently published stochastic models (cf. Eichner 2003; Kretzschmar et al. 2004; Porco et al. 2004) in which smallpox transmission slows in structured populations. These models are at least a step closer to anthropology than are Kaplan and Wein (2003) in recognizing the asymmetrical and highly contingent nature of human relationships through which diseases must move.

3. This is not to deny the association between poverty and smallpox in prior centuries; however, reliable statistics on mortality by cause were not available until the nineteenth century (cf. McKeown 1976). Global statistics for smallpox were not systematically obtained until the 1920's (Fenner et al. 1988).
4. The term ''biosecurity'' has also been commonly used by food and agriculture researchers with respect to the prevention and control of more general diseases in crops and livestock. For the purpose of this article, I am applying its more recent usage concerning the threat of biological warfare and bioterrorism.
5. This is the more conservative of two recent estimates. Accounting for traffic participants, localities, and road types, Sivak and Flannagan (2004) calculate 1,018 excess road deaths during this period.
6. The exercise assumed that case detection occurred nine days after the initial infections. This is on the pessimistic side of a 9-to-17-day range for the incubation of the disease (see Fenner 1988).
7. This statement is not meant to restrict the scope of violence that occurred on all sides in post-Tito Kosovo, nor the tragedy of the bombings in the late 1990's. The point here is to affirm the legitimacy of the Kosovan Albanians' long-standing fears of ethnic violence and repression. For a somewhat balanced review of the 1990's conflicts, see Judah (2002), and Naimark (2001) for a comparative historical perspective.

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