MEETING POLICY CHALLENGES OF BIOVIOLENCE*

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My thesis this afternoon is that there is a danger. It is not acute in the sense that we must take immediate extraordinary measures. It is chronic – it is a danger that will be with us in perpetuity. This danger does not argue for restricting civil liberties, for restricting science, for unique surveillance powers or enhanced interrogation. In fact, to construe this danger as justification for circumventing or disregarding law is precisely backwards. This danger is, quite to the contrary, an argument for advancing international security under the rule of law.

The danger I speak of is the potential of malevolent use of an expanding set of tools emerging from accelerating scientific disciplines, notably genomics and nanotechnology. The danger is that these tools could enable a small group of people to inflict harm, perhaps at catastrophic levels, perhaps on a global scale. These scientific disciplines offer profound benefits for humanity, yet there is the looming security challenge of how to minimize the risk of their hostile application.

Today, if someone really despises 21st Century civilization, what can be done. There are very few ways to malevolently cause widespread harm and incite levels of chaos that could rattle the pillars of modern civilization. At some point, perpetrators of hate have to realize that conventional attacks are just not doing the trick. The 9/11 attacks, the bombing of the Madrid and London subways, and numerous smaller plots have all put civilization on edge, but history marches inexorably forward more or less as it was before.

There is, however, one way to shred the prevailing social fabric. It is how the deity has done it since the days of pharaoh: inflict a scourge. The danger is that one day a combatant or fanatic will choose to raise the stakes by using a weapon that altogether multiplies casualties. Indeed, disease and

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strife are the Achilles' heels of our age; bioviolence is how they intersect, ideal for today's forms of strife where victims are primarily defenseless civilians.

Just as planes flying into towers on 9/11 instantly became an historical marker dividing strategic perspectives before from after, that day will herald the onslaught of disease as an instrument of malevolence, profoundly changing everything.

A malevolent perpetrator would face significant hurdles in planning and executing such an attack, but emerging scientific capabilities are eroding those hurdles. For example, diseases once thought to be eradicated and for which scant natural immunity remains can be re-synthesized; processes of contagion can be specifically accelerated for already lethal agents or contagious agents can be made more lethal; highly dangerous agents can be made vaccine or antibiotic resistant; or advanced mechanisms of drug delivery can be adjusted to effectively disseminate lethal agents to broad populations.

These techniques were perceived to be fanciful only a decade or two ago; soon, they may be pedestrian. Notably, these techniques offer life-enhancing opportunities, but these same techniques can threaten catastrophic violence.

The essence of scientific inquiry -- opening ever more fascinating windows into the structure of life and matter -- necessarily opens ever more dire potential to make violence easier, more lethal, more untreatable, or more contagious. In combination, these emerging techniques could convey to a small group of malcontents capabilities for making catastrophic weapons that can inflict ever greater harm to ever larger populations, engendering specters of mass panic that undermine public confidence in governments' ability to maintain security.

More fundamentally, biology, genomics, nanotech and other microsciences are a dynamic phenomenon that stretches from inquiries about humanity's most existential search – what is the architecture of life? – to the development of life-saving medicines.

If eras can be labeled according to the technology that is most transformative of humanity, then ours is indisputably the Genomic Age. The cracking of the human genome symbolized a seismic shift not only of technology and medicine but, more fundamentally, of how we perceive "humanness." Our commonality as a species has never been so tangible, and never before have we so had to face possibilities of altering the essence of what we are. Unfortunately, these advances can endow bioviolence perpetrators with unprecedented capabilities. There will remain profound obstacles. Yet,

whatever is the assessed risk today will be slightly less tomorrow, and the dangers posed tomorrow will be different than what we face today.

This danger has unique characteristics. First, there is a veritable menu of agents to hit any of a wide array of targets. They can be used anonymously, and the delayed effects following incubation would give a perpetrator more than enough time to escape undetected, perhaps to commit the attack repeatedly.

Moreover, this kind of attack sends a unique message. Any other type of attack, no matter how severe, happens at an identifiable moment in time at an identifiable place. If you aren't there, you are angry and upset but not, strictly speaking, injured by the attack. Thus, a terrorist that wants to hurt London must attack London. But if contagious agents are used, the attack can happen anywhere and spread to the target. If a highly contagious agent is used somewhere, everyone is in peril. And, obviously, the terrorists' goal is to spawn terror, and nothing quite creates horrors comparable to disease.

This is the key point of my talk today: dangers of bioviolence internationalize the pursuit of security. The inherent nature of these threats is global: malevolent actors from anywhere using pathogens obtained anywhere and refining them in a lab anywhere can release them anywhere to affect people anywhere. Emerging science is extensively distributed worldwide – both a product of and a stimulant to globalization that takes advantage of rapid trade in ideas and materials. The more that science spreads, the more that a discovery that enables catastrophic violence could come from anywhere.

Accordingly, it makes no sense to adopt policies in only one nation or even a few. To think about these threats only from the perspective of this or that country is simply wrong-headed. Indeed, to discuss bioviolence prevention policies is to explore how global governance should evolve to address perpetual challenges of advancing science and technology. Whatever threats derive from emerging science demand implementation of a global approach.

Yet, it is a daunting challenge to develop policies for the international community. Indeed, even as science is increasingly globalized, international security policies must be driven carefully through a contentious and anarchic State-centric system divided into two hundred sovereign fortresses with separate claims to unfettered decisional power. It is imperative to see that the danger of bioviolence inherently shrinks the planet into an interdependent neighborhood. Nations must realize that adamant proclamations about the inviolability of State sovereignty are, in this context, a recipe for disaster.

Besides this danger's humanity-wide dimension, there are two other characteristics that confound development of security policies. First is the pace of change. The exponential pace of scientific progress drastically outstrips the incremental growth of policies to curtail global threats. With the passage of time, the gap between scientific risks and policy controls widens. Increasingly, there is a real danger that policy formulation just can't keep up. The ramifications here are critical. Even if policies could be devised that maximize opportunities for beneficial science while minimizing risks of deliberate misuse, those answers would quickly be obsolete. Even if a net of controls could be woven that are sufficiently elastic and permeable to let science flourish while sufficiently sensitive to prevent malevolent attacks, there is the dilemma of how to catch a torpedo by casting that net from a rowboat.

Second is the imperative of tacking the security dangers associated with bioviolence in the context of a global public health agenda. Too often challenges associated with intentionally inflicted disease (whether from State bioweapons programs or terrorists) are viewed as security challenges, but challenges associated with natural disease are viewed as humanitarian challenges. Simply stated, in a world where one million children under the age of 5 die monthly, mostly due to preventable causes, this is an illegitimate distinction which tends to falsely compel a zero-sum policy approach by which dollars spent to prevent bioviolence in the United States are that much less to combat natural disease elsewhere, instead of developing mutually reinforcing strategies for accomplishing multiple objectives

What is the condition of bioviolence prevention at this time? Today, leaders proclaim that they are doing everything possible to meet this threat. Following a truly catastrophic act of bioviolence, they will likely tell the public that they had no idea where, when, or how a bioattack would occur – if they had known, they would of course have dedicated all their prodigious powers to thwart it. And the evil perpetrators of this horrible crime surely will be caught and punished.

These proclamations are disingenuous and these avowals will be half-truths, deluding all of us about where security may be found and how to get there – not so much a deliberate lie but a mirage grounded on little more than a wish and a prayer. The more complete truth is that little is being done to prevent bioviolence; if catastrophe occurs, leaders must be held responsible for willful disregard of the well-being of countless victims who entrust them to prevent unspeakable horrors.

Throughout the vast majority of the world, outside perhaps two dozen developed States, bioviolence preparations could proceed without substance chance of detection and could inflict unimaginable damage against unprotected populations.

In short, advancing policies to prevent bioviolence is what the international community does worst. It must be asked why bioviolence has not already been addressed, why international and national leaders have done such a remarkably poor job in diminishing bioviolence risks leaving too many of us virtually naked to an attack from a terrorist group or lone lunatic. No other threat presents such a stark contrast between on the one hand, severity of harm along with global denunciation but, on the other hand, a failure of leadership to reduce risks.

Although there are many contributors to this failure, my thesis here is that humanity is excessively vulnerable to bioviolence because international law is currently unable to devise, implement, and enforce prevention policies. Such policies are potentially available and effective, but they demand progressive changes in prevailing legal concepts.

More specifically, there are three reasons for this policy failure.

1. Every expert agrees that commission of bioviolence would be far easier if terrorists or criminals can get access to refined strains of lethal agents or to sophisticated laboratories where those agents can be processed into effective weapons, Yet today, there is too much that is unknown. We do not know where every well-equipped laboratory is; we suspect that not all dangerous pathogens can be accounted for; we have inadequate systems for tracking the movement of pathogens and equipment; and we have grossly inadequate capabilities of putting information together to give us the best chance to stop bio-offenders.

2. We are insufficiently taking advantage of the many law enforcers worldwide who should serve as the primary line of detection and interdiction. Many of these law enforcers are inadequately trained and ill-equipped to pursue bioviolence. More important, there are at best spotty legal prohibitions against bioviolence; of course, law enforcers operate only where there are legal prohibitions against certain behavior. Where laws are insufficient, where there are too many unanswered questions about how international legal assistance work should work, cooperation to discover and interdict bioviolence is impaired.

3. Global distribution of capacities to prevent bioviolence are woefully unjust – a product of the much larger phenomenon of economic disparity that afflicts humanity. Not enough is being done to consider how making people safer from biothreats can be accomplished with benefits to professional communities and national economies throughout the developing world. Indeed, at this time, there is insufficient (essentially nil) serious discussion about how to best enable developing countries to prevent

bioviolence. There has been no systematic effort whatsoever to link compliance with bioviolence prevention policies to measures for stimulating indigenous bioscience. It is unconscionable that major policy discussions about bioscience development are wholly and entirely separate from major policy discussions about biothreats to international peace and security. The result is that the entire world is more dangerous.

Here briefly are the pillars of a bioviolence strategy grounded firmly in international law.

1. *Denial* -- Policies should deny terrorists ready access to bioterror agents and capabilities, especially the former Soviet Union's biological weapons.

2. *Detection* -- Policies should enhance information gathering, tracking, and analysis systems to enable detection of covert bioterror preparations.

3. *Interdiction* -- Policies should enable law enforcers to interdict bioterrorism before an attack is committed.

4. *Confidence Building* -- Nonproliferation policies should effectively distinguish legitimate biodefense programs from prohibited bioweapons programs.

5. *Resilience* -- Policies should promote resilience to bioterrorism by developing new vaccines and other medical interventions.

6. *Mitigation* -- Policies should enhance public health preparedness and response worldwide.

But here's the problem. Globally, there's nobody in charge. No one is responsible; no one is accountable. With regard to bioviolence, no international authority defines relevant prohibitions and responsibilities. Over the years, many good ideas have not been rejected but have died for lack of a responsible official who has authority to act. There is no authorized focal point for new initiatives and no central body with clear capacity to carry out prevention responsibilities evaluate who might be failing to meet their responsibilities, and investigate emerging problems. As a result, even well-regarded ideas have nowhere to grow. There is not so much resistance to initiatives as there is simply an absence of initiatives, and a manifest inertia has become a significant drag on even the best public servants' calls to action. No body exists to promote reasonable, even widely shared initiatives to advance progressive policies. International alarms of bioviolence ring nowhere?

The absence of authority endangers us because bioviolence prevention requires a sizeable orchestra, made up of various instruments, to play complicated music in harmony. Today there is not a

bad conductor – there is no conductor at all. Sometimes the players rise to the occasion; too often there is little more than cacophony.

Altogether, here we may see the future of challenges to international peace and security at the beginning of the third millennium: scientific progress intertwined with malevolent threats that have consequences for all humanity. Progressing capabilities improve our lives and yet carry inextricably escalating risks to humanity. These growing threats do not argue for braking scientific progress, but they undercut notions that new threats can be effectively addressed with yesterday's policies.

Our era is witnessing a scientific revolution which calls for a revolution in how we conceive of security. Historically, scientifically revolutions that have prompted critical changes in the means of methods of executing violence have stimulated new security paradigms, but too often these paradigms were appreciated only when their obsolete predecessors had painfully failed. With regard to bioviolence, the consequences of learning through horrible experience are unacceptable.

Thus, the need to prevent bioviolence has emerged from the confluence of radically accelerating progress in bioscience along with the post-2001 pre-eminence of non-State violence atop the world's strategic agenda. Preventing bioviolence is increasingly too complicated for two hundred squabbling sovereigns to accomplish, and the consequences of getting it wrong are too dire for us to long tolerate their imprudence. Thus, bioviolence prevention portends a new chapter in the human species' most basic and most long-lasting struggle against lethal microbes and offers a new vision of how to globally organize strategic security under law. As this is a struggle we must win, international legal pursuit of prevention is a paramount priority.

Today, we are not winning. We are waiting.