#### I affirm.

### fwk

#### I value morality. My value criterion is preventing structural violence.

#### You should oppose everyday violence for two reasons- A) social bias underrepresents its effects B) its effects are exponential, not linear which means even if the only causes a small amount of structural violence, its terminal impacts are huge

**Nixon ’11** (Rob, Rachel Carson Professor of English, University of Wisconsin-Madison, Slow Violence and the Environmentalism of the Poor, pgs. 2-3)

Three primary concerns animate this book, chief among them my conviction that we urgently need to rethink-politically, imaginatively, and theoretically-what I call "slow violence." By slow violence I mean a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all. Violence is customarily conceived as an event or action that is immediate in time, explosive and spectacular in space, and as erupting into instant sensational visibility. We need, I believe, to engage a different kind of violence, a violence that is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales. In so doing, we also need to engage the representational, narrative, and strategic challenges posed by the relative invisibility of slow violence. Climate change, the thawing cryosphere, toxic drift, biomagnification, deforestation, the radioactive aftermaths of wars, acidifying oceans, and a host of other slowly unfolding environmental catastrophes present formidable representational obstacles that can hinder our efforts to mobilize and act decisively. The long dyings-the staggered and staggeringly discounted casualties, both human and ecological that result from war's toxic aftermaths or climate change-are underrepresented in strategic planning as well as in human memory. Had Summers advocated invading Africa with weapons of mass destruction, his proposal would have fallen under conventional definitions of violence and been perceived as a military or even an imperial invasion. Advocating invading countries with mass forms of slow-motion toxicity, however, requires rethinking our accepted assumptions of violence to include slow violence. Such a rethinking requires that we complicate conventional assumptions about violence as a highly visible act that is newsworthy because it is event focused, time bound, and body bound. We need to account for how the temporal dispersion of slow violence affects the way we perceive and respond to a variety of social afflictions-from domestic abuse to posttraumatic stress and, in particular, environmental calamities. A major challenge is representational: how to devise arresting stories, images, and symbols adequate to the pervasive but elusive violence of delayed effects. Crucially, slow violence is often not just attritional but also exponential, operating as a major threat multiplier; it can fuel long-term, proliferating conflicts in situations where the conditions for sustaining life become increasingly but gradually degraded.

#### You should use probability weighing – any other model of risk calculus collapses in on itself.

Kessler 08 (Oliver; April 2008; PhD in IR, professor of sociology at the University of Bielefeld, and professor of history and theory of IR at the Faculty of Arts; Alternatives, Vol. 33, “From Insecurity to Uncertainty: Risk and the Paradox of Security Politics” p. 211-232)

The problem of the second method is that **it is very difficult to "calculate"** politically **unacceptable losses**. **If** the **risk** of terrorism **is defined** in traditional terms **by** probability and **potential loss, then** the **focus on dramatic** terror **attacks leads to** the marginalization of probabilities. The reason is that **even the highest degree of improbability** becomes irrelevant **as the measure of loss goes to infinity**.^o **The** mathematical **calculation of the risk** of terrorism thus **tends to overestimate and** to **dramatize** the **danger**. **This has consequences beyond** the actual **risk assessment for the formulation** and execution **of "risk policies"**: **If one factor** of the risk calculation **approaches infinity** (e.g., if a case of nuclear terrorism is envisaged), then **there is no balanced measure** for antiterrorist efforts, **and** risk management as a rational endeavor breaks down. Under the historical condition of bipolarity, the "ultimate" threat with nuclear weapons could be balanced by a similar counterthreat, and new equilibria could be achieved, albeit on higher levels of nuclear overkill. **Under** the new condition of **uncertainty, no** such **rational balancing is possible since knowledge** about actors, their motives and capabilities, **is largely absent**. The second form of **security policy** that emerges when the deterrence model collapses mirrors the "social probability" approach. It **represents a** logic of catastrophe. **In contrast to risk** management **framed** in line **with logical probability** theory, **the logic of catastrophe does not attempt to provide means of absorbing uncertainty**. Rather, **it takes uncertainty as constitutive for** the **logic** itself; **uncertainty is a** crucial **precondition for catastrophes**. In particular, catastrophes happen at once, **without** a **warning**, but with major implications for the world polity. In this category, **we find** the impact of **meteorites**. Mars attacks, the tsunami in **South East Asia, and 9/11**. **To conceive of** terrorism as **catastrophe has consequences for** the **formulation of** an **adequate security policy**. Since **catastrophes hap-pen irrespectively of human activity** or inactivity, no political action **could** possibly **prevent them**. Of course, there are precautions that can be taken, but **the framing of** terrorist attack as **a catastrophe points to spatial and temporal characteristics that are beyond "rationality." Thus**, political **decision makers are exempt**ed **from the responsibility to provide security**—as long as they at least try to preempt an attack. Interestingly enough, 9/11 was framed as catastrophe in various commissions dealing with the question of who was responsible and whether it could have been prevented. This makes clear that under the condition of uncertainty, there are no objective criteria that could serve as an anchor for measuring dangers and assessing the quality of political responses. For ex- ample, as much as one might object to certain measures by the US administration, it is almost impossible to "measure" the success of countermeasures. Of course, there might be a subjective assessment of specific shortcomings or failures, but there is no "common" currency to evaluate them. As a consequence, **the framework of** the **security** dilemma **fails to capture** the **basic uncertainties**. Pushing the door open for the security paradox, the main problem of security analysis then becomes the question how to integrate dangers in risk assessments and security policies about which simply nothing is known. In the mid 1990s, a Rand study entitled "New Challenges for Defense Planning" addressed this issue arguing that "most striking is the fact that **we do not** even **know** who or what will constitute **the most serious future threat**, "^i **In order to cope** with this challenge it would be essential, another Rand researcher wrote, to break free from **the** "tyranny" of plausible scenario planning. The decisive **step would be to create "discontinuous scenarios ... in which there is** no plausible audit trail or storyline from current events"52 These nonstandard scenarios were later called "wild cards" and became important in the current US strategic discourse. They justified the transformation from a threat-based toward a capability- based defense planning strategy.53 The problem with this kind of risk assessment is, however, that **even the most** absurd scenarios can **gain plausibility**. **By constructing a** chain of potentialities**, improbable events are linked and brought into** the realm of **the possible, if not** even the **probable**. "**Although** the **likelihood** of the scenario **dwindles with each step, the** residual **impression is** one **of plausibility**. "54 This so-called Othello effect has been effective in the dawn of the recent war in Iraq. **The connection between Saddam** Hussein **and Al Qaeda** that the US government tried to prove **was disputed from the** very **beginning. False evidence was** again and again **presented and refuted, but this did not prevent the** administration from presenting as the main rationale for war the **improbable yet possible connection** between Iraq and the terrorist network and the improbable yet possible proliferation of an improbable yet possible nuclear weapon into the hands of Bin Laden. As Donald Rumsfeld famously said: "Absence of evidence is not evidence of absence." This sentence indicates that under the condition of genuine uncertainty, different evidence criteria prevail than in situations where security problems can be assessed with relative certainty.

### contention 1

#### The sole contention is insulin. The thesis of the aff is that current IP protections prevent the access of insulin to the most disenfranchised, a form of structural violence that is preventable. Member nations of the WTO ought to reduce IP protections for insulin and save lives.

#### Insulin is prohibitively expensive – new insulin analogues move the needle from human insulin to a lower quality, more expensive drug

Peccoud et al 18 Jenna E. Gallegos [],1 Christopher Boyer,2 Eleanore Pauwels,3 Warren A. Kaplan,4 and Jean Peccoud [Prof. Jean Peccoud joined the department in January 2016 as the Abell chair in synthetic biology]1,\*, December 18, “The Open Insulin Project: A Case Study for ‘Biohacked’ Medicines””, Trends in Biotechnology Vol 36 No. 12, <https://www.cell.com/trends/biotechnology/pdf/S0167-7799(18)30200-2.pdf> DD AG

Since its discovery in 1921, insulin has revolutionized the quality and quantity of life for persons with diabetes. Yet, despite its long market history, the cost of insulin has continued to rise. For example, insulin prices tripled between 2002 and 2013 [9], costing uninsured patients as much as US$400 per month [10]. In inner cities, the leading cause of diabetic ketoacidosis – a potentially fatal condition – is stopping or inconsistent insulin treatment, and cost is a major reason reported for this [11]. Cited examples of health risks from high insulin costs include rationing treatments, using expired products, fasting, and even intentionally inducing diabetic ketoacidosis in order to obtain insulin from hospital emergency rooms [12,13]. While many other lifesaving medications have become available as less expensive generics, the high price of insulin is maintained in part by the small number of multinational corporations that dominate the insulin market and the complex and opaque pricing and supply chain [14].

The structure of human insulin is not patent protected, but the market has shifted to the production of genetically modified insulin analogues, in large part because the pharmaceutical industry has seen fit to incrementally innovate, raise the price, and phase out the old forms of insulin [10,14]. Insulin analogues are marketed as having additional benefits such as fast or long-acting properties and labeling for pediatric or pregnant patients. However, many experts argue that the originally approved human insulin is just as effective for most patients [15,16], so it is difficult to say whether patients who, because of lack of insurance and/or socio-economic inequalities [17,18], should be literally paying the price for insulin analogues when human insulin may well be as effective.

Only now, with intellectual property (i.e., patents) for many insulin analogues having recently expired or expiring soon [19], have biosimilar insulin analogues been marketed. However, there is still no inexpensive supply of insulin biosimilars for people living with diabetes in North America, and Americans are paying a steep price for the ‘continued rejuvenation’ of this medicine [10]. Meanwhile, at least 11 insulin biosimilars are marketed (under less stringent regulatory frameworks) at considerably lower price points in China, India, Mexico, Pakistan, Peru, and Thailand [20]. Studies comparing a handful of these biosimilars to innovator insulins showed no meaningful differences [19,20].

It is difficult for potential biosimilar manufacturers to compete in the US because the regulatory system explicitly favors existing manufacturers. First, the main purpose of clinical trials is to establish similarity to an innovator biologic, not clinical benefit per se [21,22]. This emphasis on proof-of-similarity strongly favors the pharmaceutical companies that produced the original as only they have access to the confidential manufacturing protocols.

Additionally, while competitors wishing to manufacture a biosimilar are subject to strict regulatory oversight, changes by existing manufacturers rarely require clinical trials, and the resulting biosimilar is treated as interchangeable [23]. This discrepancy is deemed excusable because a manufacturer that modifies its own processes is supposed to have extensive knowledge and information about the product. It is thus no surprise that the first insulin biosimilar approved in the US, Basaglar1 (Box 2), was produced by Eli Lilly, which already owned 20% of the market share for insulin [24].

While generic drugs are typically 80% less expensive than the equivalent name-brand medications, Basaglar1 is only 15% cheaper than the innovator biologic Lantus1 [25]. The minimal cost saving associated with biosimilar insulins likely has little to do with manufacturing cost; the market value of pharmaceutical insulin is over $1000 per gram [9], while insulin costs roughly $50–75 per gram to manufacture [24]. Instead, costs are largely set by the intellectual property holders in response to the complex regulatory environment surrounding biologic drugs. Developers of biohacked insulin will thus have to navigate both intellectual property and regulatory hurdles in order to develop a more affordable model for insulin production.

#### IP perpetuates evergreening, specifically for insulin – that prevents the creation of cheap, generic medicine

Greene 15 Jeremy A. Greene, M.D., Ph.D [I received an MA in medical anthropology from Harvard in 2004, the MD and PhD degrees in the history of science from Harvard in 2005]., and Kevin R. Riggs, M.D., M.P.H., March 19, 2015, “Why Is There No Generic Insulin? Historical Origins of a Modern Problem”, New England Journal of Medicine 372:1171-1175, <https://www.nejm.org/doi/full/10.1056/NEJMms1411398> DD AG

Reducing the problem of generic insulin to the contemporary debate over biosimilarity ignores the historical reason why we have always lacked generic insulin: incremental innovation has repeatedly precluded the formation of a generic-insulin industry in North America when earlier patents expired. The history of insulin hasn't followed the standard chronology of pharmaceutical innovation, in which patent monopolies predictably give way to generic competition.

Viewed in historical perspective, insulin is not a single entity but a family of related products that has evolved through incremental improvements. Subsequent iterations of insulin represented actual innovations, each one being safer, more effective, or more convenient than its predecessor. And yet after generations of incremental innovation, insulin may be no more affordable than it was when the original patent holders sold their stake for $1 to ensure access to this essential medicine.

Pharmaceutical-industry analysts have described a repatenting tactic called evergreening, in which a series of related patents — often on metabolites or optical isomers — extend the life of a product after initial patent expiration.23 Evergreening can shift market share within a family of products: for example, after Pfizer lost patent exclusivity on the antiepileptic agent gabapentin (Neurontin) in 2004, it retained a healthy share of the market through patents on a metabolic cognate, pregabalin (Lyrica). Critics of evergreening often claim that the incremental innovations leading from a given drug to a “me-too” drug are trivial: pregabalin, for example, is not clearly safer or more efficacious than gabapentin.

But the cascading generations of insulin products can hardly be dismissed as simply “me-too” medicines. Protamine insulin offered a distinct advantage over regular insulin, NPH insulin offered a distinct advantage over protamine insulin, and so on. On the whole, insulin today is demonstrably safer and more convenient to use than products available in 1923. But whether each incremental innovation is worth the price we pay, in a world where insulin remains unaffordable to many patients with diabetes, is less certain. When lente insulin was introduced in the 1950s, some observers questioned whether its minimal theoretical advantages over NPH warranted the complexity introduced by adding another insulin formulation to the market.24 The theoretical advantages offered by the monocomponent extract insulins may sometimes have been outweighed by the inconvenience and risk caused by transitioning patients to an insulin of different potency.25 Although recombinant insulin was heavily advertised as a clinically superior agent in the 1980s (Figure 1), almost no evidence was provided to demonstrate its superiority to the best available animal-extract insulins.26 Although long-acting analogues cause less hypoglycemia than NPH does,27 it has yet to be shown that analogues lead to better long-term outcomes than standard recombinant human insulin does.28

No doubt for many patients, these incremental innovations were worth the added price. What's surprising is that the trailing edge of old insulin products did not generate a market for generic competition but rather became a set of obsolete products that were promptly removed from the U.S. market. Pork and beef insulins are not merely underutilized, they are unavailable for human use in the United States. Even when practitioners prescribe NPH and R insulin in place of insulin glargine and insulin aspart, these cheaper prescriptions are filled with newer recombinant products sold under brand names. And yet on the whole, it's hard to say that contemporary patients who cannot afford their insulin (let alone the patent-protected glucometers and test strips required to adjust the dose) are well served by having as their only option an agent that is marginally more effective than those that could have been generically available 50 or 30 or 10 years ago, had generics manufacturers introduced cheaper versions when patents expired.

Generic-drug companies have evidently not considered it worthwhile to invest in the additional good manufacturing practices needed to produce a version of insulin that may already be obsolete, when off-patent small-molecule drugs represented lower-hanging fruit. Only recently, with insulin-analogue patents expiring and no next-generation products on the horizon, have prominent generics manufacturers shown serious interest in the insulin market.

It is hard to overstate the economic and public health impact of generic drugs in improving access to safe, effective, inexpensive medications in the United States. In the early 1960s, fewer than 1 in 10 medicines dispensed in pharmacies were generic, and most prescription drugs were effectively monopolies. Today, more than 80% of prescriptions are filled with generics, which saves the health care system billions of dollars each year.29,30 These savings are critical both for payers that are squeezed by rising health care costs and for patients, because lower medication costs are associated with better adherence31 and better outcomes.32

But the case of insulin demonstrates that the generics market is like other markets — not an automatic phase in the life cycle of a drug. As the increasing waves of generic-drug shortages in the past decade also remind us, the drugs that ultimately see extensive generic competition differ from those that attract few, if any, manufacturers. The history of insulin highlights the limits of generic competition as a public health framework. Nearly a century after its discovery, there is still no inexpensive supply of insulin for people living with diabetes in North America, and Americans are paying a steep price for the continued rejuvenation of this oldest of modern medicines.

#### This has been happening for the last century—think about how many lives could have been saved.

Peccoud 18 Jean Peccoud [Prof. Jean Peccoud joined the department in January 2016 as the Abell chair in synthetic biology.], 9-13-2018, "After a century, insulin is still expensive – could DIYers change that?," Conversation, <https://theconversation.com/after-a-century-insulin-is-still-expensive-could-diyers-change-that-99822> DD AG

Soon after Federick Banting discovered that insulin could be used to treat diabetes in 1921, he sold the patent to the University of Toronto for about a dollar. Banting received the Nobel prize because his discovery meant a life-saving drug could become widely available. Nearly a century later, an American with diabetes can pay as much as US$400 per month for insulin, driving some uninsured patients to desperate and dangerous measures. Clearly, something went wrong. Our lab studies biosecurity, so when we heard that a group of do-it-yourself biologists was working to solve the insulin affordability problem by figuring out how to manufacture insulin patent-free, we got to know them. After digging into the insulin affordability issue, we argue that what’s keeping insulin expensive is not patents – it’s regulations. By operating in a regulatory blind spot, DIYers could upset the status quo for drug production. Discovering and developing drugs is expensive. Patents help drug companies recoup the costs from their investments by granting them a monopoly for a limited time. Once the patent expires, competing companies can begin producing generics: off-brand versions of a patented drug. This healthy competition drives prices down. So why, with the original patent long-expired, is there still no affordable generic insulin? The insulin for purchase today is not the same insulin used to treat diabetic patients nearly 100 years ago. That insulin came primarily from animals. Today, insulin is brewed up by microbes that have been genetically engineered with the gene for human insulin. And insulin is seldom injected with an old-fashioned syringe and needle anymore. Now there are insulin pens, pumps, test strips and other devices that improve the quality of life for diabetic patients. Pharmaceutical companies have also modified the chemical formula to produce faster-acting or longer-lasting insulins. With each of these inventions came a new patent. But the benefits of these “improved” insulins are debatable, and there’s nothing preventing competing companies from selling older, long off-patent versions of insulin. So what’s the holdup? Regulations keep insulin expensive Insulin is a biologic drug, which means it’s produced by a living organism, not a chemical reaction. This process, called biomanufacturing, is more inconsistent than chemical synthesis of non-biologic drugs like aspirin. Making reliable biologic drugs is a little like winemaking. Even though the winemaker carefully follows a well-established process, minute differences will affect the final product. It’s always wine, but some vintages are better than others and tasting the wine is the only way to evaluate the final product. So if a new company wants to make insulin, that insulin has to be tested on patients in expensive clinical trials. Bringing a biologic drug to market can cost as much as $250 million. No company can afford that lump if it can’t file for a patent to recoup the investments. That’s why there’s only one “generic” insulin available so far. It’s made by a company that was already a major player in the insulin market, and it’s only 15 percent cheaper than the patented version. By comparison, most non-biologic generic drugs cost 80 percent less than the original. Obviously, regulations are important for keeping insulin safe, but at what cost? Ten percent of people living with diabetes in the U.S. are uninsured, and there are nearly 10,000 crowdfunding campaigns related to insulin on the site GoFundMe alone. Stories about diabetic patients ending up hospitalized or worse because they tried to ration their insulin are all-too common.

#### IP stands in the way of innovative, biohacked insulin that solves diabetes and is cheaper than existing medicines – only the plan allow for a new wave of biohacked innovation – turns the innovation DA

Peccoud et al 18 Jenna E. Gallegos [],1 Christopher Boyer,2 Eleanore Pauwels,3 Warren A. Kaplan,4 and Jean Peccoud [Prof. Jean Peccoud joined the department in January 2016 as the Abell chair in synthetic biology]1,\*, December 18, “The Open Insulin Project: A Case Study for ‘Biohacked’ Medicines””, Trends in Biotechnology Vol 36 No. 12, <https://www.cell.com/trends/biotechnology/pdf/S0167-7799(18)30200-2.pdf> DD AG

Biohacked insulin will face different intellectual property barriers depending on the distribution model. If the Open Insulin Project succeeds in developing and releasing a protocol for insulin manufacturing, and that protocol is adapted for personal use (as epinephrine auto-injectors have been), intellectual property will likely not be a substantial obstacle. Personal use of ‘home-brewed insulin’ would not trigger any patent considerations in most European countries, as the exclusive exploitation rights granted by a patent are restricted to commercial exploitation. In Europe, a private person who builds a patented invention and/or uses a patented method in her own home for her own personal goals generally cannot infringe on a patent. The reasoning behind this is that such a situation cannot harm the patent holder. In the US, the law is stricter, and it forbids anyone from making, using, or experimenting with an invention, even when the use is not commercial, except in very limited cases [26]. Practically speaking, however, since patent infringement lawsuits are very expensive, and it is Difficult to track restricted use in private, an individual would rarely, if ever, be prosecuted for using an invention in her own home. In the case of insulin, the safety ramifications of this scenario are obvious and will be discussed more thoroughly in the following sections.

Any other innovation ecosystem for insulin (e.g., ‘magistral’ production or technology transfer to a generic company) may run afoul of patents on the molecule and the production process, provided such patents exist. We note that there are plenty of patent applications filed for various ‘next generation’ insulin analogs, methods of making them, and methods of using them [27]. However, patents protecting the amino acid sequence of unmodified human insulin itself and of some recently off-patent insulin analogues are not a major barrier to the market introduction of affordable insulin. Patents protecting production methods of insulin are a more likely intellectual property obstacle.

Manufacturing is typically protected by a combination of patents and proprietary, non-patented know-how, or ‘trade secrets,’ which do not expire like patents. Manufacturing intellectual property includes the strain of microorganism used to biologically manufacture, or ‘express,’ the insulin and the specifics of the microbial fermentation process and recovery/purification of the expressed protein. Trade secrets are often used to protect non-patentable information. An insulin ‘bio hacker,’ however, can independently uncover or stumble upon and ‘acquire’ a trade secret.

#### The plan would be implemented through the Affordable Drug Manufacturing Act – precedent makes it normal means

Scott 18 Dylan Scott [grew up in Ohio, lived in Las Vegas for a year and moved to Washington in 2011. I cover health care and other domestic policy.], 12-20-2018, "Elizabeth Warren’s ambitious new bill to lower generic drug prices, explained," Vox, <https://www.vox.com/policy-and-politics/2018/12/20/18146993/elizabeth-warren-2020-election-drug-prices-bill> DD AG  
The two lawmakers are targeting generic drugs — knockoff versions of brand-name medications that have lost their patent protections — specifically in their legislation. Generic drugs are supposed to lower drug prices by introducing cheaper alternatives to the brand-name version. But the generic drug industry has come under a lot of scrutiny in recent years, both for hiking generic prices and becoming the target of a historic lawsuit for anti-competitive practices. The system is often not working as intended.

Here’s what Warren and Schakowsky would propose to do: Under limited circumstances, the federal government would produce a more affordable generic version of certain drugs. These are the scenarios when the feds could start manufacturing their own medications:

* If no company is producing a generic version of the drug
* If only one or two companies are producing a drug and there is either a price hike or a drug shortage
* If only one or two companies are producing a drug, the price makes it difficult for some patients to afford, and the World Health Organization classifies it as an “essential medicine”

The bill allows the federal government to either produce the drugs itself or contract an outside company to do it. It would set “fair” prices to cover the costs of making the drugs. They also want the federal government to start producing insulin, which helps treat diabetes (which tens of millions of Americans have) and has seen its prices triple or so over the past decade.

“This proposal could be a helpful intervention for those generic drugs that have recently seen price spikes or are in shortage,” Rachel Sachs, who follows the drug pricing debate at Washington University in St. Louis, told me.

I heard the same from others — “an intriguing idea” as Craig Garthwaite, a health economist at Northwestern University, said.

Major hospitals had the same idea. They’ve set up a new nonprofit drug company, along with some philanthropic groups, that would produce drugs under similar circumstances as the Warren-Schakowsky bill. This is one of the hot ideas in health care right now.

There are some questions, of course, starting first and foremost with how well equipped the government is to make medications. The Food and Drug Administration previously forced the National Institutes of Health to shut down its drug manufacturing facilities over quality concerns — though this legislation notably allows the federal government to contract with private companies to do the actual drug producing.

#### Prioritize structural impacts – worst-case scenario predictions are based on threat exaggeration – distorts rational decision-making and justify preemptive warfare

Mueller & Stewart ’11 [John, Woody Hayes National Security Studies and Professor of Political Science @ Ohio State University, Mark, Professor of Civil Engineering and Director of the Centre for Infrastructure Performance and Reliability at the University of Newcastle in Australia, “Terror, Security, and Money”, page numbers below]

Focusing on Worst-Case Scenarios Cass Sunstein, who seems to have invented the phrase "probability neglect," assesses the version of the phenomenon that comes into being when "emotions are intensely engaged." Under that circumstance, he argues, "people’s attention is focused on the bad outcome itself and they are inattentive to the fact that it is unlikely to occur." Moreover, they are inclined to "demand a substantial governmental response-even if the magnitude of the risk does not warrant the response." It may be this phenomenon that Treverton experienced. Playing to this demand, government officials are inclined to focus on worst-case scenarios, presumably in the knowledge, following Sunstein's insight, that this can emotionally justify just about any expenditure, no matter how unlikely the prospect the dire event will actually take place. Accordingly; there is a preoccupation with "low probability/ high consequence" events, such as the detonation of a sizable nuclear device in midtown Manhattan. The process could be seen in action in an article published in 2008 by Secretary of Homeland Security (DHS) Michael Chertoff. He felt called upon to respond to the observation that the number of people who die each year from international terrorism, while tragic, is actually exceedingly small. "This fails to consider," he pointed out, "the much greater loss of life that Weapons of mass destruction could wreak on the American people." That is, he was justifying his entire budget-only a limited portion of which is concerned with Weapons of mass destruction by the WMD threat, even while avoiding assessing its likelihood. It is sometimes argued that conventional risk analysis breaks down under extreme conditions because the risk is now a very large number (losses) multiplied by a very small number (attack probability). But it is not the risk analysis methodology that is at fault here, but our ability to use the information obtained from the analysis for decision making. A "high consequence" event has been defined to be a "disaster" or "catastrophe" resulting in "great human costs in life, property environmental damage, and future economic activity" However, depending on how one weighs the words in that definition, there may have been only one terrorist event in all of history that qualifies for inclusion. Moreover, the vast bulk of homeland security expenditures is not focused on events that fit a definition like that, but rather on comparatively low-consequence ones, like explosions set off by individual amateur jihadists. Analyst Bruce Schneier has written penetratingly of worst-case thinking. He points out that it , involves imagining the worst possible outcome and then acting as if it were a certainty. It substitutes imagination for thinking, speculation for risk analysis, and fear for reason. It fosters powerlessness and vulnerability and magnifies social [immobilization] ~~paralysis~~. And it makes us more vulnerable to the effects of terrorism. It leads to bad decision making because it's only half of the cost-benefit equation. Every decision has costs and benefits, risks and rewards. By speculating about what can possibly go wrong, and then acting as if that is likely to happen, worst-case thinking focuses only on the extreme but improbable risks and does a poor job at assessing outcomes. It also assumes "that a proponent of an action must prove that the nightmare scenario is impossible," and it "can be used to support any position or its opposite. If we build a nuclear power plant, it could melt down. If we don't build it, We will run short of power and society will collapse into anarchy" And worst, it "validates ignorance" because, "instead of focusing on what we know, it focuses on what we don't know-and what we can imagine." In the process, "risk assessment is devalued" and "probabilistic thinking is repudiated in favor of possibilistic thinking." As Schneier also notes, worst-case thinking is the driving force behind the precautionary principle, a decent working definition of which is "action should be taken to correct a problem as soon as there is evidence that harm may occur, not after the harm has already occurred." It could be seen in action less than a week after 9/11, when President George W Bush outlined his new national security strategy: "We cannot let our enemies strike first . . . [but must take] anticipatory action to defend ourselves, even if uncertainty remains as to the time and place of the enemy's attack. To forestall or prevent such hostile acts by our adversaries, the United States, will, if necessary act preemptively \_ . . America will act against such emerging threats before they are fully formed." The 2003 invasion of Iraq, then, was justified by invoking the precautionary principle based on the worst-case scenario in which Saddam Hussein might strike. If, on the other hand, any worst-case thinking focused on the potential for the destabilizing effects a war would have on Iraq and the region, the precautionary principle would guide one to be very cautious about embarking on war. As Sunstein notes, the precautionary principle "offers no guidance-not that it is wrong, but that it forbids all courses of action, including regulation." Thus, "taken seriously it is paralyzing, banning the very steps that it simultaneously requires."9 It can be invoked in equal measure to act or not to act. There are considerable dangers in applying the precautionary principle to terrorism: on the one hand, any action taken to reduce a presumed risk always poses the introduction of countervailing risks, while on the other, larger, expensive counterterrorism efforts will come accompanied by high opportunity costs." Moreover "For public officials no less than the rest of us, the probability of harm matters a great deal, and it is foolish to attend exclusively to the worst case scenario." A more rational approach to worst-case thinking is to establish the likelihood of gains and losses from various courses of action, including staying the current course." This, of course, is the essence of risk assessment. What is necessary is due consideration to the spectrum of threats, not simply the worst one imaginable, in order to properly understand, and coherently deal with, the risks to people, institutions, and the economy The relevant decision makers are professionals, and it is not unreasonable to suggest that they should do so seriously. Notwithstanding political pressures (to be discussed more in chapter 9), the fact that the public has difficulties with probabilities when emotions are involved does not relieve those in charge of the requirement, even the duty to make decisions about the expenditures of vast quantities of public monies in a responsible manner. [page 14-17]