

## Assessing Measures Designed to Protect the Homeland

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*Some general parameters are proposed for evaluating homeland security measures that seek to make potential targets notably less vulnerable to terrorist attack, and these are then applied to specific policy considerations. Since the number of targets is essentially unlimited, since the probability that any given target will be attacked is near zero, since the number and competence of terrorists is limited, since target-selection is effectively a near-random process, and since a terrorist is free to redirect attention from a protected target to an unprotected one of more or less equal consequence, protection seems to be sensible only in a limited number of instances.*

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Some 34 percent of homeland security outlays are devoted to making potential targets notably less vulnerable to terrorist attack—to protecting what the Department of Homeland Security calls “critical infrastructure” and “key assets” or “key resources” (Hobijn & Sager, 2007, p. 2). I seek here to set out some general parameters for coming to grips with this homeland security concern to supply a framework for analysis. As illustration, I then apply the parameters to forge something of an assessment of which targets it may make sense to seek to protect and which ones might best be left unprotected.

My concern, then, is with *protection*—measures constituting what military people might call passive defense, such as posting security guards, hardening targets against explosions, screening people entering an area, setting up barriers, and installing security cameras (DHS, 2009, p. 7).

I do not deal with *policing* or other active defense measures—efforts to hunt down and detain terrorists after they have committed violent acts or (preferably, of course) before they have done so. Nor am I focusing on *mitigation*—measures that seek to reduce the consequences of a terrorist attack after it happens, such as the establishment of emergency procedures for evacuation, of measures that might contain the damage, or of facilities to provide medical treatment to the injured. Nor do I seek to assess the promotion of *resilience*—the ability to absorb, and sensibly to respond to, a terrorist attack (Flynn, 2007; Shapiro, 2007, p. 16). The costs and benefits of policing, of mitigation, and of resilience promotion

should be subjected to a similar analysis, but, except incidentally, that is not the focus here.

### Policy Considerations: Premises

There seem to be at least eight premises that should be taken into consideration when formulating policy for protecting the homeland, for seeking to reduce its vulnerability.

#### 1. *The Number of Potential Terrorist Targets Is Essentially Infinite*

Terrorists seek to kill people and/or to destroy property in pursuit of a political goal.<sup>1</sup> They may exercise some discrimination in selecting targets, but because people and vulnerable property are readily at hand everywhere in the United States, they have a wealth of potential targets—there are something like five million commercial buildings alone (Stewart, 2008). Nothing can be done to change this fundamental condition. Indeed, it is difficult to think of something that *could not* be a target. Even a tree in the woods, after all, could be ignited to start a forest fire.

#### 2. *The Number of Terrorists Appears to Be Exceedingly Small and Their Efforts and Competence Rather Limited*

Since terrorism of a considerably destructive nature can be perpetrated by a very small number of people, or even by a single individual, the fact that terrorists are few in number does not mean there is no problem. However, many homeland security policies were put in place when the threat seemed far larger, and those perceptions may still be fueling, and possibly distorting, current policy.

Thus, in 2002, intelligence reports were asserting that the number of trained al-Qaeda operatives in the United States was between 2,000 and 5,000 (Gertz, 2002). And on February 11, 2003, FBI Director Mueller assured a Senate committee that al-Qaeda had “developed a support infrastructure” in the country, and had achieved “the ability and the intent to inflict significant casualties in the US with little warning.”<sup>2</sup> By 2005, however, after years of well-funded sleuthing, the FBI and other investigative agencies concluded in a secret report that they had been unable to uncover a single true al-Qaeda sleeper cell anywhere in the United States (Ross, 2005), a finding (or nonfinding) publicly acknowledged 2 years later (Isikoff & Hosenball, 2007).

Al-Qaeda deserves special attention in this because it is, as Glenn Carle, a 23-year veteran of the Central Intelligence Agency, where he was deputy national intelligence officer for transnational threats, puts it, “the only Islamic terrorist organization that targets the U.S. homeland” (Carle, 2008). However, if one looks at attacks worldwide outside of war zones since 9/11, not only by al-Qaeda, but also by its imitators, enthusiasts, look-alikes, and wannabes, the total number of people killed comes to some 200–300 per year.<sup>3</sup> That, of course, is 200–300 too many, but it

may be taken to suggest that the threat is rather limited. Moreover, the rate of terrorist mayhem outside of war zones may, if anything, be declining (Mack, 2008).

In assessing dangers presented by international terrorists, then, policymakers should keep in mind Carle's warning: "We must see jihadists for the small, lethal, disjointed and miserable opponents that they are." Al-Qaeda "has only a handful of individuals capable of planning, organizing and leading a terrorist organization," and "its capabilities are far inferior to its desires" (Carle, 2008; see also Gerges, 2008a,b; Sageman, 2008).

In testimony on January 11, 2007, Director Mueller suggested that "We believe al-Qaeda is still seeking to infiltrate operatives into the U.S. from overseas," but even that may not be true. Since 9/11, well over a billion foreigners have been admitted to the United States legally, even as many others have entered illegally (Monger & Barr, 2009). Even if border security was so good that 90 percent of al-Qaeda's operatives were turned away or deterred from trying to enter, some should have made it in—and some of those, it seems reasonable to suggest, would have been picked up by law enforcement by now. The lack of attacks inside the United States, combined with the inability of the FBI to find any potential attackers, suggests that the terrorists are either not trying very hard or are far less clever and capable than usually depicted.

It follows that any terrorism problem within the United States principally derives from homegrown people, often isolated from each other, who fantasize about performing dire deeds, and in the same testimony, Mueller stressed that his chief concern about terrorism within the United States is now with homegrown groups. From time to time, some of these people may manage to do some harm, though in most cases their capacities and schemes—or alleged schemes—seem to be far less dangerous than initial press reports suggest.

Although they might conceivably someday rise to the cleverness of the 9/11 plot, far more likely to be representative is the experience of the would-be bomber of a shopping mall in Rockford, IL, who exchanged two used stereo speakers (he could not afford the opening price of \$100) for a bogus handgun and four equally bogus hand grenades supplied by an FBI informant (Lawson, 2008). Had the weapons been real, he might actually have managed to do some harm, but the threat he posed was clearly quite limited. Michael Kenney (2009) has interviewed dozens of officials and intelligence agents and analyzed court documents, and finds homegrown Islamic militants to be operationally unsophisticated, short on know-how, prone to make mistakes, poor at planning, and severely hampered by a limited capacity to learn. Another study (Eilstrup-Sangiovanni & Jones, 2009) documents the difficulties of network coordination that continually threaten operational unity, trust, cohesion, and the ability to act collectively.

By contrast, the image projected by the DHS is of an enemy that is "relentless, patient, opportunistic, and flexible," shows "an understanding of the potential consequence of carefully planned attacks on economic transportation, and symbolic targets," seriously threatens "national security," and could inflict "mass casualties, weaken the economy, and damage public morale and confidence" (DHS, 2009, p. 11). That description may fit some terrorists—the 9/11 hijackers among them—but not, it seems likely, the vast majority.

### 3. *In Many Cases, Target Selection Is Effectively a Random Process*

For homegrown terrorists—and, as Director Mueller suggests, they seem to be the most likely prospective perpetrators of terrorism in the United States—targets are likely to be selected for their convenience. Thus, the would-be bomber targeted the Rockford Mall because it was nearby. Similarly, the two men in 2007 who sought to ram a car loaded with explosives into the Glasgow, Scotland airport presumably selected that target because they happened to live near it. This process, together with other internal motivating mechanisms stressing group cohesion and camaraderie more than grand planning (see Abrahms, 2008), effectively make terrorist target selection something like a random process. Efforts to determine terrorist “intent” in advance become, then, highly problematic.<sup>4</sup>

### 4. *The Probability That Any Specific Target Will Be Attacked Is Extremely Small in Almost All Cases*

Despite the attention it garners, terrorism is a rather rare occurrence comprised of incidental, isolated acts of mayhem perpetrated by individuals or by small groups, violence that generally does a comparatively limited amount of damage. Even under quite dire scenarios, in a country like the United States, the chance an individual target will be hit is vanishingly small. Indeed, at present rates, and assuming another 9/11 every several years, the lifetime probability that a resident of the globe who lives outside a war zone will die at the hands of international terrorists is about one in 80,000 (Mueller, 2006, p. 2). For that number to change radically, terrorists would have to become *vastly* more capable of inflicting damage: in fact, they would pretty much need to acquire an atomic arsenal and the capacity to deploy and detonate it.<sup>5</sup>

Given that it can be carried out by a single individual or by a very small group, terrorism, like crime, can never be fully extinguished. Therefore, it is of course essentially certain that *some* target *somewhere* will be struck by terrorists. However, the chance any individual target will be attacked is exceedingly small, perhaps even vanishingly so in almost all cases. Protection measures may effectively reduce this likelihood further by deterring the terrorists or by reducing the target’s vulnerability to attack. But for the overwhelmingly vast number of targets, they do so by nudging that likelihood from near zero to even more nearly zero.<sup>6</sup> And the question is, as risk analyst Howard Kunreuther puts it, “How much should we be willing to pay for a small reduction in probabilities that are already extremely low?” (Kunreuther, 2002, pp. 662–63).

### 5. *If One Potential Target Happens to Enjoy a Degree of Protection, the Agile Terrorist Generally Can Readily Move on to Another One*

There is also something that might be called “the displacement effect.” Terrorists can choose and change their targets depending on local circumstances. This process, of course, does not hold in the case of natural disasters: a tornado bearing down on Kansas does not choose to divert to Oklahoma if it finds Kansans too well protected.

In stark contrast, if the protection of one target merely causes the terrorist to seek out another from among the near infinite set at hand, it is not clear how society has gained by expending effort and treasure to protect the first. The people who were saved in the first locale are gainers, of course, but their grief is simply displaced onto others.

There have been instances in Israel in which suicide bombers, seeing their primary targets, shopping malls, rather well protected, blew themselves up instead on the street (Ellig, Guiora, & McKenzie, 2006, p. 7). The Israelis count this as something of a gain, since they claim that fewer people died as a consequence, something likely to be of rather small comfort to the victims' families. Actually, however, if the goal of terrorists is to kill, shopping malls do not generally make all that lucrative a target, because people tend to be fairly widely dispersed in them, something that is often less true on the sidewalks outside them (Stratfor, 2007).

It also seems essentially impossible, due to the massive number of lucrative targets the country presents, to protect them enough so that international terrorists are directed in frustration to visit their violence on other countries. Measures that make it sufficiently difficult for outside terrorists to get into the country may conceivably do so, but not ones devoted to protection.

*6. To the Degree Protection Measures Make One Target Safer,  
They Make Other Ones Less Safe*

An inference deriving from the displacement effect should be specifically pointed out and considered. Building hurricane shelters in one area does not increase the likelihood another place will be struck by the hurricane, but in the case of terrorism, the displacement effect essentially means that any effort to protect or to deter a terrorist attack upon a potential target means that other targets become more at risk.<sup>7</sup> Obviously, this would be of no concern if all potential targets could be protected, but that is clearly impossible. Protection policy therefore necessarily requires making choices about what to protect and this, equally necessarily, means that targets left off the protection list become more attractive to the terrorist.

For example, there is a program to protect bridges in the United States, and a list of something like 200 of the most important bridges had been drawn up. There seems to be no evidence terrorists have any particular desire to blow up a bridge, due in part, perhaps, to the facts that it is an exceedingly difficult task under the best of circumstances, and that the number of casualties is likely to be much lower than for many other targets (Stewart, 2009). The hope of the protectors apparently is that, after security is improved for all these targets, any terrorists who happen to have bridges on their hit list will become disillusioned. If so, however, they might become inclined to move on to the 201st bridge or, more likely perhaps, to another kind of bridge: the highway overpass, of which there are some 590,000 in the United States (Hall, 2004). If the terrorists' attention is drawn further to any one of a wide array of multiple overpass bridge networks, they might be inclined to destroy one of those. The financial and human consequence, not to mention the devastating traffic inconvenience, that could result from such an explosion might well surpass the destructive

consequences of one directed at one of those 200 bridges. The issue, then, is: how has society been benefited by the protection of the bridges?

*7. Most Targets Are “Vulnerable” in That It Is Not Very Difficult to Damage Them, But Invulnerable in That They Can Be Rebuilt in Fairly Short Order and at Tolerable Expense*

On the one hand, most, probably almost all, potential terrorist targets are “vulnerable” in the sense that they can be damaged, in many cases badly, even by a simple explosion. On the other hand, if a damaged target can be readily repaired or replaced at an acceptable cost in time and money, including reasonable compensation to any victims—that is, if the effect of the violence can be readily absorbed—there is a sense in which it could be said that the target is not vulnerable. (This discussion focuses entirely on material targets; people are also highly vulnerable, and, if killed, cannot, of course, be “repaired.”) For example, the considerable damage inflicted on 9/11 on part of the Pentagon was repaired fairly quickly, as were the tourist facilities destroyed in the Bali attack in 2002.

*8. It Is Essentially Impossible Adequately to Protect a Very Wide Variety of Potential Terrorist Targets Except by Completely Closing Them Down*

Veronique de Rugy has drawn an important lesson from Britain’s experience with terrorism during the July 2005 attacks on the London Underground.<sup>8</sup> In part because of previous experience with Irish Republican Army terrorism in the city, the London Underground is normally fairly well policed. Then, after the terrorist attacks of 7 July 2005, these prevention and protection measures were, of course, vastly enhanced. Yet despite this, terrorists successfully infiltrated more bombs into the Underground a mere two weeks after the first attack. As it happened, the bombs did no damage because they were poorly constructed and did not actually explode, but this fortunate result, of course, stems entirely from terrorist incompetence, not from the protective measures. As she concludes, this experience strongly suggests that the quest to make targets like that adequately secure is essentially hopeless. Protective measures may complicate the situation for the terrorist somewhat, but in many cases only marginally so.

### **Policy Considerations: Implications**

Five policy conclusions or implications can be derived at least in part from these premises.

*1. Any Protective Policy Should Be Compared with a “Null Case”: Do Nothing, and Use the Money Saved to Rebuild and to Compensate Any Victims*

Working from the premises outlined above, any policy that seeks to protect potential targets—to make them less vulnerable to terrorist attack—should routinely be compared in cost effectiveness to a null alternative. This would hold that, given



the (exceedingly) low probability any individual target will be hit, given the essentially random nature of much target selection, given the ability of terrorists to redirect their focus from one of a huge number of potential targets to another, and given the often rather modest costs of rebuilding an attacked target, it is incumbent upon the policymaker to consider whether the proposed policy is more cost-effective than refraining from spending anything at all on a particular target or set of targets and then using money saved to rebuild, to repair, and to compensate in the unlikely event that an attack on the target actually happens to take place (de Rugy, 2006; Mueller, 2006, p. 147).<sup>9</sup> Included in the calculation should be a consideration of the emotional and psychological costs potentially inflicted by the terrorist act.

## 2. *Abandon, or at Least Greatly Scale Back, Efforts to Imagine a Terrorist Target List*

Considerable effort has been made over the years by the Department of Homeland Security to imagine which targets terrorists might prefer to attack, and this inventory now reportedly runs into the hundreds of thousands (Moteff, 2007; Office of Inspector General, 2006).

It is true that not every potential material terrorist target is equally valuable, equally vulnerable, or equally costly to protect or to repair or replace. However, numbers begin to look much alike when they are multiplied by one very close to zero.

Conceivably, one might compile a *very* short list of targets that might enjoy special appeal to terrorists—the next section of this article has some suggestions on this. However, because of the multiplicity of targets (especially if killing people is the terrorists' goal), because of the exceedingly low likelihood any particular target will be struck, and because of the semi-random and perhaps quite limited nature of the terrorism enterprise, the process of target identification can quickly become one of imaginative, and even obsessive, worst-case scenario thinking. Moreover, as Frank Furedi (2008) notes, such a "vulnerability-led response" can "foster a climate that intensifies people's feeling of insecurity and fear," and this in turn "invariably leads to the discovery of weaknesses that have the potential to turn virtually any institution in any place into a terrorist target" (p. 651).

Partly in consequence, once a short list is established, the logic of protection can become overtaken by the effusive, self-generating, and self-perpetuating reality of the pork barrel. Because essentially anything can be a target, those seeking funds can easily imagine themselves on the list in a determined pursuit of shares of the largesse. Thus, Democratic Senator Pat Leahy of Vermont complained that the Bush Administration wanted "to shortchange rural states," even as Democratic Senator Hillary Clinton of New York faulted that same administration for the opposite perceived defect: "The reality is that they don't have a constituency in big cities" (Ripley, 2004).<sup>10</sup>

The quest after funds has also contested big cities against smaller ones. But it is difficult to see a plausible way in which this debate can be adequately adjudicated. It is true that cities like New York, London, Madrid, and Washington have been attacked by terrorists in recent years, but so has remote Glasgow, as well as resort

areas in Egypt and Indonesia that are far from cities. And plotters and suspects apprehended within the United States have variously been accused of planning to inflict (or at least of vaguely thinking about inflicting) mayhem not only on the Brooklyn Bridge and on Kennedy Airport in New York, but on targets in such places as Baltimore, MD; Seattle, WA; Portland, OR; Detroit, MI; Boston, MA; Chicago, IL; Minneapolis, MN; Ft. Dix, NJ; Columbus, OH; Miami, FL; upstate New York; and Rockford and Peoria, IL (Emerson, 2006, p. 120; Lawson, 2008).

### 3. *Temper Worst-Case Thinking*

In developing terrorist risk assessment scenarios for fixed targets, the DHS applies what it calls “reasonable worst-case conditions” (DHS, 2009, p. 34). Although it sensibly warns against compounding “numerous unlikely conditions” into such thinking, that process can become almost inevitable.

If the likelihood a given target will be struck is exceedingly small, to assume the attack will in addition be massive substantially compounds the probability issue. That is, given the limited nature of the terrorist enterprise and the multiplicity of potential targets, the likelihood a specific target will be hit is breathtakingly small, and, given the quite modest capacities of most terrorists, the likelihood is also extremely low that any hit will even remotely correspond to “reasonable worst-case” possibilities, such as a duplication of the 1995 Oklahoma City attack when a vehicle-borne device delivered an explosion equivalent to 4,000 pounds of TNT.

Moreover, not only does worst-case thinking compound (or bedevil) the likelihood (or unlikelihood) estimation, it can undermine probabilistic thinking entirely. If the results of an attack are assumed to be potentially catastrophic, a special kind of “probability neglect” (compare Sunstein, 2003) takes over: under such circumstances, there is a tendency to conclude that no protection cost would be unbearable no matter how unlikely the prospect of an attack.

In addition, since funds are limited, it is not at all clear that protecting a relatively small number of potential targets from extreme (if perhaps “reasonable”) attacks makes more sense than protecting a much larger number against lesser attacks.

### 4. *Consider the Negative Effects of Protection Measures: Not Only Direct Cost, But Inconvenience, Enhancement of Fear, Negative Economic Impacts, Reduction of Liberties*

As terrorism inflicts not only direct, but indirect, costs, it is elemental that any sensible antiterrorism policy proposal must include a consideration of both the direct and indirect costs that might flow from the policy.

Clearly, there are sizeable direct economic costs to seeking to protect the homeland. Some of these accrue in direct protective expenditures—e.g., to deal with the extremely unlikely event of a direct replication of the anthrax attacks of 2001, the Post Office has spent some \$1 billion for each fatality suffered in those attacks (Mueller, 2006, p. 31). But they can also accrue in indirect ones, such as deterring inconvenienced customers from entering protected shopping centers (LaTourrette, Howell, Mosher, & MacDonald, 2006).



Sometimes, security measures can even cost lives. Increased delays and added costs at airports due to new security procedures provide incentive for many short-haul passengers to drive to their destination rather than flying. Since driving is far riskier than air travel, the extra automobile traffic generated by increased airport security screening measures has been estimated to result in 400 or more extra road fatalities per year (Blalock, Kadiyali, & Simon, 2007; Ellig et al., 2006, p. 35).

Protection and other policies can also enhance fear unrealistically. One preliminary study finds that visible security elements like armed guards, high walls, and barbed wire made people feel less vulnerable to crime. However, when these same devices are instituted in the context of dealing with the threat of terrorism, their effect is to make people feel tense, suspicious, and fearful, apparently because they implicitly suggest that the place under visible protection is potentially a terrorist target (Grosskopf, 2006). In other words, the protective measures supplied exactly the negative emotional effect terrorists hope to induce themselves. By the same token, security measures that do reduce fear may be beneficial.

#### *5. Consider the Opportunity Costs, the Trade-offs, of Protection Measures*

Any sensible policy analysis must include a consideration of what else could have been done with the effort and money being expended on the policy proposed (Schneier, 2003). One study assesses increased post-2001 federal homeland security expenditures, much of them devoted to protective measures. It then compares that to expected lives saved as a result of these increased expenditures. It concludes that some 4,000 lives would have to be saved per year to justify the increased expenditures, and that the cost per life saved ranges from \$63 million to \$630 million (or even more) per life saved, greatly in excess of the accepted regulatory safety goal of \$7.5 million per life saved. Not only do these expenditures clearly and dramatically fail a cost-benefit analysis, but their opportunity cost, amounting to more than \$31 billion per year, is considerable. It is highly likely that far more lives would have been saved if the money (or even a portion of it) had been invested instead in a wide range of more cost-effective risk mitigation programs. For example, an investment of \$200,000 per year in smoke alarms will save one life, and similar examples can be found in other risk reduction measures or regulations (Stewart & Mueller, 2009). Any analysis that leaves out such considerations is profoundly faulty, even immoral.

#### **Application: Situations in which Protection Is Essentially Futile**

These considerations lead to a set of specific policy proposals about protection measures. One very large category includes situations in which protection is unlikely to be cost-effective.

#### *Weapons of Mass Destruction (WMD) Attacks*

It is difficult to imagine protecting a potential target against an atomic bomb explosion because of the bomb's destructive capacity and because an atomic terrorist

can choose where to set the device off. Accordingly, policy in this area would sensibly focus on prevention and policing, and also perhaps on mitigation efforts, such as establishing evacuation routes to move people from contaminated areas and setting up and designating specific facilities to care for victims. Policy should also be concerned about preventing or dealing with panic.

The same generally holds for attacks with chemical, biological, and radiological weapons. The chief victims in these cases would be people, not structures, and protection measures are unlikely to be feasible. Indeed, they are nearly impossible. As with atomic attacks, policing and prevention efforts might be feasible, including, perhaps, systematic efforts to reduce a terrorist's ability to obtain or steal dangerous materials. Planning for dealing with an attack after it has taken place, in an effort to minimize its consequences, may also be worthwhile. These would include efforts concerning evacuation and other mitigation strategies and approaches. Establishing plans, procedures, and preparations to clean up after an attack also might make sense.<sup>11</sup>

As with many other homeland security issues, the installation of sensors to measure chemical, biological, or radiological levels and therefore to detect attacks in their early stages could save lives. This seems more nearly to be a mitigation than a protection measure. But, regardless, the displacement factor looms large here. If, say, Manhattan has sensors and if the terrorists know this, there is no gain to society if the attackers simply move over to Newark or Washington or Columbus.<sup>12</sup>

#### *Small, Essentially Random Conventional Attacks*

Far more probable than WMD attacks are small isolated ones using such devices as conventional explosives, incendiaries, and guns. Applying the considerations laid out above, efforts to protect people and structures from the effects of these are unlikely to be cost-effective because of the multiplicity of targets, the ability of the terrorist to shift targets as needed, the capacity in many cases quickly to rebuild, the limited capability of most terrorists, and the difficulty of predicting which targets are most appealing to terrorists. If the terrorists' goal is to kill people more or less at random, lucrative targets are essentially everywhere. If their goal is to destroy property, protection measures may be able to deter or inconvenience or complicate, but only to the point where the terrorists seek out something comparable among a vast—or even effectively infinite—array of potential unprotected targets.

An important difference here is with protection against crime. Although many efforts designed to protect people from crime may well fail to be cost-effective, protection policy in this area at least has some hope of success, because crime is vastly more common, and, in particular, because it is comparatively easy to designate high crime areas and to ascertain what criminals are generally after: loot. Because of these circumstances, a fair amount of prediction is possible, and protective measures can often make a potential target less vulnerable to crime, in some cases even effectively invulnerable (though there would still be a displacement problem. Specifically, if there is nothing valuable at the target, or if any valuables there cannot be lifted at acceptable cost and risk, and if criminals know this, the target becomes

distinctly (and predictably) unattractive to them. For example, an entire class of targets—municipal buses—were removed from the criminal target list when exact fare procedures were put into effect, which meant that any significant amount of money on the bus was now encased in a hardened lock box rather than in a cash drawer used by the driver to make change.

In contrast, terrorism is much more like vandalism than like crime. It comes close effectively (and seemingly) to being a random occurrence, and the potential targets of the perpetrators are exceedingly difficult to predict. But, ultimately, one cannot readily become invulnerable to vandalism, though displacement may be possible in some cases.<sup>13</sup>

### **Applications: Situations Where Protection May Potentially Be Effective**

For a few target sets, protection may make sense, particularly when protection is feasible for an entire class of potential targets and when the destruction of something in that target set would have quite large physical, economic, psychological, and/or political consequences.

#### *Nuclear and Chemical Plants and Material*

There are not a large number of nuclear plants, and an adept terrorist attack on them could potentially have devastating consequences. Consequently, they seem to be prime candidates for protection. However, the big ones, nuclear reactors, seem already to be quite secure—and, for a number of reasons, were so even before terrorism became much of an issue.

There are a very large number of chemical plants, although mostly, like nuclear plants, they are placed away from population centers, a fact that may considerably reduce the urgency. It is possible to conjure damaging scenarios, but, except under the most severe circumstances such as the 1984 chemical release, apparently by sabotage, at Bhopal, India, any dispersion is likely to have rather limited physical consequences. Panic, however, could enhance the effect. The same holds for biological pathogens, although in this case, the chief fear is that terrorists will be able to make the pathogens themselves, not steal them.

#### *Key Infrastructure Nodes*

It would make sense to protect any specific infrastructure nodes whose destruction could cause widespread damage—e.g., by putting a large area out of electricity for months. It is not at all clear that any such nodes exist. However, if they do, it would probably be more efficient to expend effort to establish backup emergency redundancies rather than seeking to protect the nodes themselves. At any rate, investment in this area is worthwhile because if such nodes are susceptible to terrorist disruption, they probably are as well to more likely events, like lightning, heavy winds, and other natural hazards, or like human error or sabotage by a

disgruntled employee. A similar conclusion might hold for some dams and for concentrations of chemicals and explosives.

Various DHS documents and Presidential and Congressional reports and directives focus on something called "critical infrastructure." Applying common sense English about what that phrase could be taken to mean, it should be an empty category. If any element in the infrastructure is truly "critical" to the operation of the country, steps should be taken immediately to provide redundancies or backup systems so that it is no longer so (see also Stewart, 2009).

The same essentially holds for what DHS calls "key resources," defined as those that are "essential to the minimal operations of the economy or government" (DHS, 2009, p. 15n). It is difficult to imagine what a terrorist group armed with anything less than a massive thermonuclear arsenal could do to hamper such "minimal operations." The attacks of 9/11 were by far the most damaging in history, yet, even though a major commercial building was demolished, both the economy and government continued to function at considerably above the "minimal" level.

#### *Major Ports*

There are only a few major ports in the United States, and the economy of the country depends heavily on them. Accordingly, protecting them against at least a major attack may be a useful effort. However, since redirection of shipping is fairly easy, if costly and inconvenient, the chief problem here comes, as Stephen Flynn (2007) points out, from overreaction: policymakers could probably not restrain themselves from closing all the ports down if one were hit, thus inflicting massive costs on the economy (pp. 35–36, 93). The sensible solution in this case, obviously, would be to have people in charge who are level-headed and not overburdened by such considerations. If it is true, however, that this is essentially impossible, protection of ports may be the most cost-effective measure to take in this case.

#### *Symbolic Targets*

Protection measures may be justified for a small group of symbolic, even iconic, targets like the Capitol, the White House, the Statue of Liberty, the British Parliament buildings, the Sydney Opera House, the Eiffel Tower, the Washington Monument. In these cases, however, the main cost would be in embarrassment or in a painful loss of prestige because all (like the Pentagon after 9/11) could readily be repaired after an attack by a conventional explosive, and because any loss of life might well be smaller than for terrorist explosions in places of congregation. Moreover, in all cases, any protective benefits should be balanced with a reasonable cost consideration: the prevention of embarrassment is not an infinite good. Given the low probability that even prime symbolic targets will be hit, limited protective measures might be all that is called for. Thus, huge amounts of money have been spent in an elaborate effort to make the Washington Monument secure when the considerable bulk of that benefit might have been achieved, perhaps, simply by hiring a few additional security guards.

Relatedly, there may be a small number of potential targets that are likely to appear so lucrative to terrorists that they would have difficulty restraining themselves if the targets were inadequately protected. One might be the person of the President of the United States, though, given assassination attempts in the past, protecting that person is unfortunately wise and necessary for quite a few reasons beyond the kind of terrorism that is of present concern. Given the proclivities of some terrorists, Israel's El Al airline would seem to be an attractive, high-visibility, rather trophy-like target, and so Israel's extraordinary efforts to screen passengers and baggage may make sense. On the other hand, a very large number of potential Jewish targets—thousands of synagogues, for example—are highly visible and vulnerable (albeit not, perhaps, quite to the same degree as El Al), yet they seem to go substantially unmolested.

### **Application: The Case of Commercial Passenger Airliners**

Finally, it may be useful to apply some of this thinking to the case of protecting commercial airlines and their passengers in the United States. Protection may be feasible, or at least may seem to be so, because, although there are many airports in the country, their number is fairly tractable. There are some 27 major ones and a few thousand smaller ones, numbers that are vastly lower than, for example, the number of highway overpasses, fast-food restaurants, or places of congregation like stadiums, theaters, churches, and assembly halls.

#### *The Special Impact of Airliner Destruction*

Unlike the destruction of other modes of transportation, the downing of an airliner (or, especially, of two or three in succession) does seem to carry with it the special dangers of a widespread, lingering impact on the airline industry and on related ones such as tourism (Schneier, 2003, pp. 235–36). Three years after 9/11, domestic airline flights in the United States were still 7 percent below their pre-9/11 levels, and by the end of 2004, tourism even in distant Las Vegas had still not fully recovered.<sup>14</sup> These numbers do not necessarily represent dead losses to the economy, because much of that money may have simply been spent elsewhere or else productively saved. However, they do suggest a very substantial disruption that unfairly affects a small number of industries, a disruption that was costly to all, because it was felt necessary partly to mitigate the consequences by the infusion of tax money.

By contrast, if a bus or train is blown up, people still need to board them and will do so after a short period of wariness—as was found after the bombings in London and Madrid. To a considerable degree, people have a choice about whether to use commercial airliners, and many can turn to other modes of transport—or, often, simply not take the trip. Riders of subways, buses, and probably even ferries very often do not have the same luxury.

Similarly, if a building is destroyed, people still enter them: after 9/11, people soon returned to office buildings, even skyscrapers. Indeed, if the 9/11 attacks

had been accomplished by explosives (as was attempted in 1993 with the World Trade Center or as was accomplished with the building-demolishing bombing in Oklahoma City in 1995), there would have been a vastly lower social and economic impact, because few would have systematically avoided buildings, or even urban office buildings.

The events of September 11, 2001, suggest there can be another special cost in the case of airline terrorism. In fear of flying, many people canceled airline trips and consequently traveled more by automobile, and studies have concluded that more than 1,000 people died in automobile accidents in 2001 alone between September 11 and the end of that year because of such evasive behavior (Blalock, Kadiyali, Daniel, & Simon, forthcoming; Sivak & Flannagan, 2004).

It probably mattered as well on 9/11 that the airplanes were commercial passenger airliners. If they had been private or cargo planes, the effect on the airline industry (and on highway fatalities) would probably have been considerably less.

#### *Is the Response to 9/11, Like the Event itself, an Outlier?*

Much of the concern about terrorists taking down an airliner extrapolates from the 9/11 experience which had, as noted, a crushing, if temporary, effect on airline passenger traffic. Particularly in the few years after 2001, it was commonly said that if terrorists were able now to down two or three more airliners, they would destroy the airline industry.

But, as the degree of destruction on 9/11 was unique in the history of terrorism, so, possibly, is the extent of the reaction. From time to time, terrorists have been able to down airliners—the Lockerbie tragedy of 1988 high among them—but the response by the flying public has not been nearly so extreme. After two Russian airliners were blown up by Chechen terrorists in 2004, that airline industry seems to have continued without massive interruption.

However tragic in its own terms, the downing of additional American airliners may not prove to be nearly as consequential as sometimes envisioned—perhaps in part because 9/11 has established such a vivid, and high, benchmark. Relevant here is the fact that the terrorist attacks on resort areas in Bali in 2002 had a far larger negative impact on tourism than did subsequent ones in 2005.

#### *Can the Costs Be Reduced?*

Even if it is concluded that the protection of commercial passenger airliners is necessary, the process should still include sensible cost-benefit analyses in an effort to provide the best benefit at the lowest cost. Is there, in particular, any real need to have boosted expenditures and procedures beyond those already in place on September 10, 2001—or even to have continued those? There clearly has been a demand for safety from the flying public, but not for specific measures, such as vastly boosting the number of air marshals, forcing people to take off their shoes in security lines, or establishing a complicated no-fly list that generates enormous numbers of false positives (Holmes, 2009).



*Relaxing Some Measures.* One might begin such a consideration by exploring areas in which protective measures might be relaxed with little or no likely effect either on the essential security of airline passengers or on their willingness to fly.

Actually, there have already been some modest relaxations, ones that seem to have been sensible, to have reduced costs, and to have been accepted by the flying public and have not, it seems, led to a decline in airline passenger traffic. These include:

1. Passengers are no longer required to undergo the unproductive, time-wasting process of answering questions about whether they packed their luggage themselves and have had their bags with them at all times. This exercise was instituted after the Lockerbie bombing of 1988, generating quite possibly the greatest amount of sustained mendacity in history, particularly among people who had checked luggage at hotels for a period of time before going to the airport.
2. Beginning in late 2005, passengers were allowed to take short scissors and knives with them on planes, as these were deemed too inoffensive to pose much of a security risk. The measure was justified on the grounds that it productively freed screening personnel to concentrate on weaponry potentially more lethal. Perhaps that has been its consequence, although a spokeswoman for the Association of Flight Attendants did alarmingly warn of another one at the time: "When weapons are allowed back on board an aircraft, the pilots will be able to land the plane safely but the aisles will be running with blood" (Goo, 2005).
3. The inconvenient ritual of forcing passengers to remain in their seats during the last half-hour of flights to Washington's DCA airport has been eliminated.
4. Considerations of permanently closing Washington's DCA airport, potentially a very costly venture, were abandoned.
5. Harassment of automobiles picking up and dropping off passengers appears to have been relaxed some.
6. Passengers are now usually required to show boarding passes only once to inspectors.
7. Passengers no longer need to show their identification at the gate.

Further advances have been variously suggested. Pilots have wondered forcefully why they need to be screened for weapons since, once in the cockpit, they scarcely need weapons to crash the airplane should they take it into their mind to do so. The general requirement to screen crews at all has been questioned, particularly because ground crews and delivery personnel with equal or greater access to the plane are not screened (Smith, 2007).

It is also often noted that, in something of a natural experiment, passengers boarding planes to the United States and elsewhere at foreign locales, including security-conscious Heathrow airport in London, are not required to remove their shoes—the procedure that seems most to slow down the security line. There have

been no negative consequences from this—no shoe bombs—and people do not seem to be any more reluctant to board planes.

There ought also to be some discussion of why American airports are still on orange alert where they were placed after an airline bomb plot was rolled up in distant Britain in 2006. Since the additional security cost for being on orange rather than yellow alert for the Los Angeles airport alone apparently can run to \$100,000 per day, this issue would seem to deserve some reflection (Goo, 2004).

*Abandoning Efforts to Prevent a Replication of 9/11.* Any effort designed solely to prevent a direct replication of the 9/11 attacks seems questionable. As pilot Patrick Smith puts it forcefully:

Conventional wisdom says the terrorists exploited a weakness in airport security by smuggling aboard box-cutters. What they actually exploited was a weakness in our mindset—a set of presumptions based on the decades-long track record of hijackings. In years past, a takeover meant hostage negotiations and standoffs; crews were trained in the concept of “passive resistance.” All of that changed forever the instant American Airlines Flight 11 collided with the north tower. What weapons the 19 men possessed mattered little; the success of their plan relied fundamentally on the element of surprise. And in this respect, their scheme was all but guaranteed not to fail. For several reasons—particularly the awareness of passengers and crew—just the opposite is true today (Smith, 2007; see also Mueller, 2006, p. 4; Schneier, 2003, pp. 123–24, 247–48).

More specifically, expensive security measures that seek to keep weapons (as opposed to explosives) out of the passenger cabin might well be reexamined. In fact, if passengers had been allowed to bring weapons onto airplanes, 9/11 might never have happened, because this would have massively complicated the plotters’ plans.

And then there are the air marshals (see also Stewart & Mueller, 2008a,b). Their chief goal, and just about their only one, is to prevent a replication of 9/11, a problem that, as indicated, does not seem actually to exist. There were less than 50 marshals before 9/11, but there are now thousands, and the program costs hundreds of millions of dollars per year (de Rugy, 2005, p. 4). In January 2008, Australia announced a considerable cutback in the number of its sky marshals (Maley, 2008). If this change is accepted in stride by the Australians, maybe the same result could be expected in the United States.

*Reconsidering the Protection of Airports.* Although there may be special reasons, as suggested above, to protect airplanes, it is not at all clear that there are any special reasons to protect airports. Compared with many other places of congregation, people are more dispersed in airports, and, therefore, a terrorist attack is likely to kill far fewer than if, e.g., a crowded stadium is targeted. In addition, airports sprawl and are only two or three stories high, and, therefore a collapse of a portion of them is not

likely to be nearly as significant as the collapse of a taller or more compact structure. Moreover, if a bomb does go off at an airport, the consequences would likely be comparatively easy to deal with: passengers could readily be routed around the damaged area, e.g., and the impact on the essential function of the airport would be comparatively modest.

### *How Much Security Theater Is Necessary?*

It would be useful in such considerations fully to explore the degree to which security theater may or may not be needed. If there is a measure which makes passengers feel substantially safer, this would have to be considered as a benefit even if the measure itself does not actually enhance security at all. As Cass Sunstein (2003) puts it, “the reduction of even baseless fear is a social good” (p. 132).

However, quite a few security measures presumably carry little theatrical value: e.g., air marshals are not supposed to be identifiable by passengers (or terrorists, of course), and so the absence, or presence, of such people on a flight does nothing to affect feelings of security. Crew screening probably has a similar noneffect.

But there should be studies to determine if other measures are equally useless from this perspective. As noted, the relaxation of the ban on short pointy objects does not seem to have enhanced fear or reduced passenger traffic. Would other such changes be acceptable? What would happen to fear levels and passenger traffic if security measures were severely reduced to, say, 2000 levels—or even ended altogether?

### *What Are the Negative Consequences of the Security Measures?*

For a full cost-benefit analysis, one would also have to take into consideration not only the human costs, where the decline in short haul air trips has apparently led to an increase in highway fatalities as discussed above, but also the economic costs of longer waits in airports. One economist calculates that strictures effectively requiring people to spend an additional half-hour in airports cost the economy \$15 billion per year, whereas, in comparison, total airline profits in the prosperous 1990s never exceeded \$5.5 billion per year (Congleton, 2002, p. 62).

Included in this, of course, would be a consideration of the opportunity costs. Specifically, what is being foregone in order to expend nearly \$10 billion per year on airline security? Could the money be more effective—save far more lives—if it were used instead to enforce seat belt laws or install smoke alarms?

## **Conclusion**

“In general,” concludes security expert Bruce Schneier (2003), “the costs of counterterrorism are simply too great for the security we’re getting in return, and the risks don’t warrant the extreme trade-offs we’ve been asked to make” (p. 249). This may well be the case for the quest to make the country less vulnerable. Although

there may be some areas in which the effort makes sense, much of it, on reasonably close examination, seems to have been highly questionable.

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### Notes

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1. For a discussion of their low success rate at achieving their goals, see Abrahms (2006).
2. Testimony by Mueller can be found through <http://www.fbi.gov/congress/congress.htm>.
3. Independent tallies of such attacks are supplied in Cordesman (2005, pp. 29–31); Jenkins (2006, pp. 179–84); and “Jihadi Attack Kill Statistics,” 2007, *IntelCenter* (August 17): 11. <http://www.intelcenter.com>. Accessed December 16, 2009.
4. In contrast, see DHS (2009, pp. 33, 37).
5. For an analysis of this likelihood, see Jenkins (2008) and Mueller (2010), and, in contrast, Allison (2004). As is discussed a bit more fully below, weapons of mass destruction are not particularly relevant to a discussion of protection measures, because they cannot be protected against for the most part. Policing, mitigation, and resilience measures may, however, be useful, but, as indicated at the outset, those are not the policies of concern here.
6. For a study concluding that because of the low probability of a terrorist attack, it is not worth spending more than a few thousand dollars per year (far less than hiring a single security guard) to protect even the two percent of the commercial buildings in the United States that can be considered to be “large,” see Stewart (2008).
7. On this issue, see also Powell (2007) and Ervin (2006, pp. 156–58). A DHS report (2009, p. 11) acknowledges this problem, but does not really explore its implications, instead simply suggesting that it “underscores the necessity for a balanced, comparative approach that focuses on managing risk commensurately across all sectors and scenarios of concern.”
8. Personal communication.
9. For an otherwise impressive study where this is not done, see LaTourrette et al. (2006).
10. On this issue, see also Lustick (2006), and, in contrast, Prante and Bohara (2008).
11. For an excellent discussion of this issue, see Eraker (2004). There ought, as well, to be discussions about applying the very conservative standards now in place for determining when an area has become “contaminated,” especially with respect to radiological releases. Even to discuss this problem, however, presents considerable political problems (Mueller, 2010).
12. Such an elemental consideration does not appear to be part of the decision process, judging from a *Washington Post* discussion of the issue: Hsu (2008).
13. New York seems to have been able to get graffiti under control on the subways. However, this was accomplished not by making the subways invulnerable, but rather by continually cleaning the graffiti up, thus reducing the vandals’ incentive to decorate.
14. “Domestic flights,” 2004, *Financial Times*, September 14: 8. Las Vegas: Clarke (2005, p. 63); some Las Vegas casinos report that their fourth-quarter earnings in the last quarter of 2001 were about one third of the year earlier.

### References

- Abrahms, Max. 2006. “Why Terrorism Does Not Work.” *International Security* 31 (2): 42–78.
- . 2008. “What Terrorists Really Want: Terrorist Motives and Counterterrorism Strategy.” *International Security* 32 (4): 78–105.

- Allison, Graham T. 2004. *Nuclear Terrorism: The Ultimate Preventable Catastrophe*. New York: Times Books.
- Blalock, Garrick, Vrinda Kadiyali, and Daniel H. Simon. 2007. "The Impact of Post-9/11 Airport Security Measures on the Demand for Air Travel." *Journal of Law and Economics* 50 (4): 731–55.
- . Forthcoming. "Driving Fatalities After 9/11: A Hidden Cost of Terrorism." *Applied Economics*.
- Carle, Glenn L. 2008. "Overstating Our Fears." *Washington Post* (July 13): B7.
- Clarke, Richard A. 2005. "Ten Years Later." *Atlantic* January/February: 61–77.
- Congleton, Roger D. 2002. "Terrorism Interest-Group Politics, and Public Policy." *Independent Review* 7 (1): 47–67.
- Cordesman, Anthony H. 2005. *The Challenge of Biological Weapons*. Washington, DC: Center for Strategic and International Studies.
- Department of Homeland Security. 2009. *National Infrastructure Protection Plan: Partnering to Enhance Protection and Resiliency*. Washington, DC: Department of Homeland Security.
- de Rugy, Veronique. 2005. "What Does Homeland Security Spending Buy?" Working Paper No. 107. Washington, DC: American Enterprise Institute for Public Policy Research, 1 April.
- . 2006. "The Case for Doing Nothing." *Cato Unbound*, 28 September. <http://www.cato-unbound.org/2006/09/28/veronique-de-rugy/the-case-for-doing-nothing>. Accessed December 16, 2009.
- Eilstrup-Sangiovanni, Mette, and Calvert Jones. 2009. "Assessing the Dangers of Illicit Networks: Why al-Qaida May Be Less Dangerous than Many Think." *International Security* 33 (2): 7–44.
- Ellig, Jerry, Amos Guiora, and Kyle McKenzie. 2006. *A Framework for Evaluating Counterterrorism Regulations*. Washington, DC: Mercatus Center, George Mason University.
- Emerson, Steve. 2006. *Jihad Incorporated: A Guide to Islam in the US*. Amherst, NY: Prometheus Books.
- Eraker, Elizabeth. 2004. "Cleanup after a Radiological Attack: U.S. Prepares Guidance." *Nonproliferation Review* 11 (3): 167–85.
- Ervin, Clark Kent. 2006. *Open Target: Where America Is Vulnerable to Attack*. New York: Palgrave Macmillan.
- Flynn, Stephen. 2007. *The Edge of Disaster*. New York: Random House.
- Furedi, Frank. 2008. "Fear and Security: A Vulnerability-Led Policy Response." *Social Policy and Administration* 42 (6): 645–61.
- Gerges, Fawaz. 2008a. "Taking on Al-Qaeda." *Washington Post* (June 17): C8.
- . 2008b. *Word on the Street*. <http://Democracyjournal.org> (Summer): 69–76. Accessed December 16, 2009.
- Gertz, Bill. 2002. "5,000 in U.S. Suspected of Ties to al Qaeda; Groups Nationwide Under Surveillance." *Washington Times* (July 11): A1.
- Goo, Sara Kehaulani. 2004. "Going the Extra Mile." *Washington Post* (April 9): E1.
- . 2005. "TSA Would Allow Sharp Objects on Airliners." *Washington Post* (November 30): A1.
- Grosskopf, Kevin R. 2006. "Evaluating the Societal Response to Antiterrorism Measures." *Journal of Homeland Security and Emergency Management* 3 (2): 1–9.
- Hall, Mimi. 2004. "Terror Security List Way Behind." *USA Today* (December 9): 1A.
- Hobijn, Bart, and Erick Sager. 2007. "What Has Homeland Security Cost? An Assessment 2001–2005." *Current Issues in Economics and Finance (Federal Reserve Bank of New York)* 13 (2): 1–7.
- Holmes, Marcus. 2009. "Just How Much Does That Cost, Anyway? An Analysis of the Financial Costs and Benefits of the 'No-Fly' List." *Homeland Security Affairs* 5 (1).
- Hsu, Spencer S. 2008. "New York Presses to Deploy More Bioweapons Sensors." *Washington Post* (January 9): A3.
- Isikoff, Michael, and Mark Hosenball. 2007. *The Flip Side of the NIE 15 August*. <http://www.newsweek.com/id/32962>. Accessed December 16, 2009.
- Jenkins, Brian Michael. 1975, 2006. *Unconquerable Nation: Knowing Our Enemy and Strengthening Ourselves*. Santa Monica, CA: RAND Corporation.
- . 2008. *Will Terrorists Go Nuclear?* Amherst, NY: Prometheus.

- Kenney, Michael. 2009. *Organizational Learning and Islamic Militancy*. Washington, DC: U.S. Department of Justice National Institute of Justice. <http://www.ncjrs.gov/pdffiles1/nij/grants/226808.pdf>. Accessed December 16, 2009.
- Kunreuther, Howard. 2002. "Risk Analysis and Risk Management in an Uncertain World." *Risk Analysis* 22 (4): 655–64.
- LaTourrette, Tom, David R. Howell, David E. Mosher, and John MacDonald. 2006. "Reducing Terrorism Risk at Shopping Centers: An Analysis of Potential Security Options." Technical Report. Santa Monica, CA: RAND Corporation.
- Lawson, Guy. 2008. "The Fear Factory." *Rolling Stone* 7: 60–65.
- Lustick, Ian S. 2006. *Trapped in the War on Terror*. Philadelphia: University of Pennsylvania Press.
- Mack, Andrew. 2008. "Dying to Lose: Explaining the Decline in Global Terrorism." In *Human Security Brief 2007*. Vancouver, BC: Human Security Report Project, School for International Studies, Simon Fraser University, 8–21.
- Maley, Paul. 2008. "Overhaul Cuts Sky Marshals by a Third." *Australian News* (January 23).
- Monger, Randall, and Macreadie Barr. 2009. "Nonimmigrant Admissions to the United States: 2008." Washington, DC: Department of Homeland Security, Office of Immigration Statistics, Annual Flow Report April.
- Moteff, John D. 2007. "Critical Infrastructures: Background, Policy, and Implementation." 13 March. Washington, DC: CRS Report for Congress Congressional Research Service, RL30153.
- Mueller, John. 2006. *Overblown*. New York: Free Press.
- . 2010. *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al Qaeda*. New York: Oxford University Press.
- Office of Inspector General. 2006. "Progress in Developing the National Asset Database." Washington, DC: Department of Homeland Security, OIG-06-40, June.
- Powell, Robert. 2007. "Defending Against Terrorist Attacks with Limited Resources." *American Political Science Review* 101 (3): 527–41.
- Prante, Tyler, and Alok K. Bohara. 2008. "What Determines Homeland Security Spending? An Econometric Analysis of the Homeland Security Grant Program." *Policy Studies Journal* 36 (2): 243–56.
- Ripley, Amanda. 2004. "How Safe Are We? The Fortification of Wyoming, and Other Strange Tales from the New Front Line." *Time* (March 29).
- Ross, Brian. 2005. "Secret FBI Report Questions Al Qaeda Capabilities: No 'True' Al Qaeda Sleeper Agents Have Been Found in U.S." *ABC News* (March 9). <http://abcnews.go.com/WNT/Investigation/story?id=566425&page=1>. Accessed December 16, 2009.
- Sageman, Marc. 2008. *Leaderless Jihad*. Philadelphia: University of Pennsylvania Press.
- Schneier, Bruce. 2003. *Beyond Fear: Thinking Sensibly About Security in an Uncertain World*. New York: Copernicus.
- Shapiro, Jeremy. 2007. "Managing Homeland Security: Develop a Threat-Based Strategy." Washington, DC: Brookings Institution, Opportunity 08 paper.
- Sivak, Michael, and Michael J. Flanagan. 2004. "Consequences for Road Traffic Fatalities of the Reduction in Flying Following September 11, 2001." *Transportation Research Part F* 7: 301–5.
- Smith, Patrick. 2007. The Airport Security Follies. <http://nytimes.com>. Accessed December 16, 2009. [jetlagged.blogs.nytimes.com/author/psmith/2007/12/28/](http://jetlagged.blogs.nytimes.com/author/psmith/2007/12/28/).
- Stewart, Mark G. 2008. "Cost-Effectiveness of Risk Mitigation Strategies for Protection of Buildings against Terrorist Attack." *Journal of Performance of Constructed Facilities* 22 (2): 115–20.
- . 2009. "Risk and Cost-Benefit Assessment of Counter-Terrorism Protective Measures to Infrastructure." Newcastle, Australia: Research Report No. 272.01.2009, Centre for Infrastructure Performance and Reliability, University of Newcastle.
- Stewart, Mark G., and John Mueller. 2008a. "A Risk and Cost-Benefit Assessment of United States Aviation Security Measures." *Journal of Transportation Security* 1: 143–59.
- . 2008b. "A Risk and Cost-Benefit Assessment of Australian Aviation Security Measures." *Security Challenges* 4 (3): 45–61.



- . 2009. "Cost-Benefit Assessment Of United States Homeland Security Spending." Newcastle, Australia: Research Report No. 273.01.2009, Centre for Infrastructure Performance and Reliability, University of Newcastle.
- Stratfor. 2007. "U.S. Shopping Malls: Unlikely al Qaeda Targets." *Stratfor* (November 9).
- Sunstein, Cass R. 2003. "Terrorism and Probability Neglect." *Journal of Risk and Uncertainty* 26 (2/3): 121–36.