

# Retaliation Against Nuclear Terror:

## A Negligence Doctrine

Anders Corr<sup>1</sup>  
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### Abstract

Nuclear proliferation and lax security standards in the storage of fissile materials make nuclear terror a threat to the existence of the United States and its allies, yet no doctrine of retaliation exists. Some experts estimate the chance of a nuclear terror event in the United States in the next ten years is at least fifty percent. The probability is increasing because of greater levels of fanaticism and extremism worldwide, and because Russian, Pakistani, and other nuclear storage areas remain vulnerable to theft or takeover of fissile material. Retaliation against states that risk the theft of fissile materials would encourage safer storage practices and discourage nuclear proliferation. Retaliation is a necessary

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disincentive to complement the ineffective incentives of current counterproliferation programs. State and sub-state actors are responsible for risking nuclear terrorism, and both have valuable assets that can serve as collateral. Nuclear terror is a deadly new threat, and old and timid ways of thinking are fatal. To forestall terrorist use of nuclear weapons against United States' cities, a doctrine of retaliation should be announced. If the United States can distinguish whose fissile material was used against us or our allies by terrorists, we should strike against that state. If the United States cannot find evidence, we should retaliate against a pre-determined and public list of proliferators and states that accept the risks of sub-standard security at their fissile material storage facilities. Negligent states are those whose lax security was a mediate cause of nuclear terror. Where the proximate cause is unavailable for deterrent retaliation, deterring an accessible mediate cause – a negligent state -- is the only effective alternative. Without a retaliatory threat, the United States is increasingly vulnerable to nuclear terror.

## **Introduction**

If a smuggled nuclear explosive detonates in a major American city, how would the United States respond? The most likely targets are New York City and Washington, D.C. In either case, hundreds of thousands would die and hundreds of billions of dollars of damage would be suffered. A severe economic depression would occur. If the blast were in DC, nearly the entire political and/or military leadership would need to be replaced, depending on the kilotonnage. If in New York, the long-term economic impact would be massive.

In either case, the international relations of the United States would drastically change course. When the Japanese attacked Pearl Harbor and killed 2,403 Americans, the US was roused from its largely isolationist and pacifist mood overnight. America became the most formidable war machine on earth, beating Japan in the Pacific and Germany in Western Europe.<sup>2</sup> When the September 11 attacks cost approximately 3000 lives and over \$100 billion in property damage, the nation responded by invading and overthrowing regimes in Afghanistan and Iraq.<sup>3</sup> In both cases, US public opinion was inflamed and fully supported offensive military retaliation. How much greater would be the response of public mood and offensive military action to an unexpected incident of nuclear terror that caused, at a minimum, 50 times the casualties and property damage of Pearl Harbor and September 11 combined? The response would be unprecedented and very likely nuclear, even if the United States had no *ex ante* doctrine that ensured retaliation. In this case, the United States would bear all the expected costs of military retaliation, without deriving the expected benefits of deterrence that flow from *ex ante* threats of retaliation.

Current incentives alone, the Cooperative Threat Reduction (CTR) program<sup>4</sup> primarily, have not fully secured fissile material storage centers in Russia and Pakistan. They have not stopped proliferators like Iran and North

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<sup>2</sup> Brogan, Hugh. *The Penguin History of the USA*. London: Penguin, pp. 555-556.

<sup>3</sup> The Century Foundation. *Economic Impact of Terrorist Attack*, p. 1.

<sup>4</sup> The CTR was previously called the Nunn-Lugar program.

Korea.<sup>5</sup> When a carrot alone is ineffective, a stick may prove useful. Provision of a complementary disincentive of retaliation in case of nuclear terror in the US would encourage rogue states to take fuller advantage of existing positive incentives offered by CTR. That the rogue state itself might have attempted, however half-heartedly, to secure its fissile material should not dissuade retaliation. Where the proximate cause of an act is unavailable for deterrent retaliation, whether because the proximate perpetrators (the terrorists) have no regard for their lives or can escape undetected, deterring an accessible mediate cause (the negligent state responsible for risking fissile material loss) is an effective alternative.

The greatest incentive for states to ensure sufficient security for their fissile material would be their careful consideration of its probable use against their own territory, a boomerang effect of lax nuclear storage. Chechen rebels might use a stolen nuclear device against Moscow. Islamic terrorists could use a stolen nuclear device against Islamabad. But the effects of nuclear theft go much further, in that Chechen rebels may choose to sell a stolen nuclear device, or Islamic terrorists may decide to use the stolen device against the United States, Israel, or Europe.

The negative externality of the nuclear material being exported and used against another state will not be sufficiently weighted in the calculus of a

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<sup>5</sup> The National Research Council has proposed goals to “develop and announce policies to deter use of weapons by terrorist states” and “improve attribution capabilities” (National Research Council 2002).

negligent state's foreign policy unless that state fears proportional retaliation, including a possible nuclear response. This threat would augment existing positive incentives offered by the CTR, to encourage the leaders of negligent nuclear states to fully secure those most dangerous of substances under their custody.

### **Liability and International Law**

The loss of fissile material that is then used against another city, when that fissile material is not stored according to global standards, is a case of wanton and culpable negligence. Culpable negligence is “recklessness or carelessness resulting in injury or death, as imports a thoughtless disregard of consequences or a heedless indifference to the safety and rights of others.” Wanton negligence is “an intentional act of an unreasonable character in disregard of a risk known, or so obvious that it must have been known, and so great as to make it highly probably that harm would follow. The act is usually accompanied by a conscious indifference to the consequences amounting almost to willingness that they shall follow.”<sup>6</sup> These basic legal precepts should translate seamlessly to international law. While we would hope that those persons entrusted with nuclear proliferation decisions and storage facilities in Russia, North Korea, and Pakistan do not want their fissile material stolen and used against the United States or one of its allies, we cannot know for certain that this is not the case. The repeated proliferation and lax security of negligent states makes a strong argument for indifference and

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<sup>6</sup> Barron's Law Dictionary. 1996. Editor, Steven H. Gifis. New York: Barron's.

criminal liability, for which the state can be the only culpable party under international law.

The threat of a nuclear response to nuclear terrorism is not unlike the threat of nuclear retaliation during the Cold War. Since 1949 when the Soviets detonated their first nuclear device, this threat chastened the actions of the great powers. A similar threat would chasten proliferators and those with insecure storage facilities. While not absolutely necessary, evidence of a particular state's malfeasance would make the liability abundantly clear.

## **Evidence**

In order to track the provenance of fissile material after a terrorist attack, human intelligence and forensic evidence can be marshaled. Tagging technologies that currently exist can be used to read a nuclear signature post-explosion. Fissile material processing techniques leave unique chemical compounds that make traceable the provenance of fissile material coming from not only a particular processing facility, but even each run at each processing facility.

The Department of Defense's Defense Threat Reduction Agency and the Department of Energy's Stockpile Stewardship Program have revived programs for fissile identification, both in matching dust samples from known nuclear tests stretching back to the 1940s and developing new forensic techniques.<sup>7</sup> President George W. Bush's proposal to limit the nuclear fuel cycle to a select group of states will also limit the number of suspects and the availability of technology,

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<sup>7</sup> National Research Council 2002; Broad 2004.

and could allow for the comprehensive tagging of new fissile materials and verifiable tracking of the movement of those tagged materials.

Existing tags could not be removed by smugglers or terrorists without prohibitively technical reprocessing equipment. Neither will most smugglers or terrorists have an incentive to remove tags unless they fear that assets hit in retaliation are assets that they value. The IAEA currently holds a sample bank of fissile materials, and post-explosion samples can be compared against these databanks.

It is possible that no evidence of a particular state's involvement will be found post-explosion. In this case, the United States could still retaliate in order to deter future attacks, proliferation, and lax security standards. Not to retaliate would be to encourage further nuclear terrorism. Retaliation in the case of no evidence ought to be specified publicly in advance, so as to take advantage of deterrence, and ought to list targets, such as states that are rogue nuclear proliferators or that do not abide by international standards of fissile material storage. By having the technology and intelligence resources necessary to enable the head of state to reasonably infer the negligent state responsible, but at the same time promising to retaliate whether or not the particular negligent state can be found, improves the credibility of the threat.

### **Credibility**

In order for a threat to be credible, the costs of retaliation to the retaliator must be less than the costs of backing down. In order to increase the costs to the head of state for not retaliating, a very specific, public, and repeated retaliatory

threat must be made in advance. Shrinking from retaliation after promising to do so should cause the head of state in the victimized country to incur heavy domestic political costs in order to make retaliation credible.<sup>8</sup>

The United States should make a clear and publicized retaliatory threat against states mediately responsible for nuclear terror against not only itself, but against any allied member of the international community. However, other states with military capabilities should also make retaliatory threats on their own behalf. France would more credibly retaliate against an attack on Paris than would the United States.

The international public relations costs of retaliation are decreased if the evidence linking a particular explosion to a particular state's fissile material is verifiable by states other than the retaliator state. In order to make deterrence

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<sup>8</sup> An objection to a presidential retaliatory threat might be that it would publicize and thus energize terrorists to pursue nuclear terrorism. In this case, the threat might be made privately to the heads of state thought to have insecure nuclear facilities, though credibility would decrease because a president would not be seen by the electorate or international community as reneging were he not to carry out the threat. If retaliation were aimed at a city or region that the terrorist or smuggler valued, the public presidential threat might actually deter terrorism. The most dangerous nuclear weapons states with respect to nuclear weapons storage are Russia and Pakistan, both of which have highly sensitive relations with the United States. These two states, in addition to many former Soviet Republics and developing nations, have power reactors that insecurely store fissile material (National Research Council, 2002). Threatening either state will require the expenditure of political capital, though doing so in the abstract through a presidential statement that threatens retaliation against *any* state that loses control of its nuclear material will lessen the political cost.

credible, the United States can publicly pledge to release all pertinent evidence should retaliation be necessary, as well as release a very specific doctrine in advance, what can be called a Negligence Doctrine.

### **A Negligence Doctrine**

The text of a Negligence Doctrine should read roughly as follows: No state may allow its fissile materials to be used against a member of the international community through its own negligence, including the loss of fissile materials that are then used without its knowledge or consent. Every state is responsible for its fissile materials, for which the negligent lack of responsibility will redound through proportional economic and/or military consequences on that negligent state. States not wishing to retain responsibility for their nuclear materials may transform those materials under the Cooperative Threat Reduction program, which subsidizes reprocessing of fissile materials into non-weapons grade material suitable for sale on the international energy market. Other states will be held responsible for the end-use of those materials as stated above, (e.g., if a nuclear terrorist event occurs in New York, and the international community discovers that the uranium for the device came from a Kazakhstan stockpile, Kazakhstan will suffer proportional economic and/or military consequences). The magnitude of the threatened retaliation will be proportional to the damage from the attack in order to properly endogenize negative externalities from inadequate security of fissile materials. Any state that loses control of its fissile materials resulting in an explosion in another state will be deemed negligent and lose the privilege of fissile storage and suffer proportional military and economic

consequences. If the exact provenance of the fissile material used in an attack cannot be determined, retaliation will occur against states known as current proliferators, or states known to have sub-standard security at their storage facilities. This doctrine is intended not for use, the cause and consequence of which all peace-loving nations abhor, but for the peaceful and effective securing of current stocks of the fissile materials that endanger all nations.

### **International Acceptance**

The expected reaction from a credible retaliatory threat against mediate causes of nuclear terror, in addition to extensive controversy, is that states with world-class standards of storage will accept the doctrine (most likely not publicly), as they benefit from pressures for improved storage and are themselves immune to retaliation (because they already have world-class storage facilities). While states that risk sub-standard storage will attempt to reject the doctrine, they will find little international support for their position and few practical alternatives to increasing the security of their storage facilities. States with sub-standard storage will perform cost-benefit analysis of three options: the status quo (low security), increased storage security to world-class standards, or relinquishing their fissile material altogether. The expected costs of these options are outlined below, with a more formalized approach in the appendix. Negligent states would compare the following for expected utility:

- The costs of low security storage minus the probability of fissile material loss from low-security storage multiplied by the probability of their use in a

nuclear terror event given their loss, multiplied by the costs of incurring retaliation multiplied by the probability of retaliation given the terror event.

- The costs of increased storage security plus the CRT incentives to do so.
- The costs of yielding the state's nuclear capability (losing deterrent or offensive capability) plus the CRT incentives to do so.<sup>9</sup>

Those states with world-class fissile material storage will have no costs from retaining nuclear capabilities in highly secure storage (Japan, the United States, and Europe). Those states with low levels of security (Pakistan, Russia, India, the former Soviet Republics, and Ghana) will calculate that a retaliatory attack or sanctions due to the attributable loss and use of their nuclear materials or from the unattributable loss and use of fissile materials from another state is a relatively high probability, increasing their willingness to secure or blend down their fissile materials through the Cooperative Threat Reduction program.

Existing intelligence and forensic capabilities make a presidential pledge of retaliation against negligent states with substandard storage facilities immediately possible, and given the high costs of nuclear terrorism, necessary. In the proliferating world of the 21st century, terrorist nuclear use is a distinct and increasing probability, and the negligence leading to such use should be decisively and publicly deterred.

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<sup>9</sup> See appendix for mathematical details.

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### Appendix: The Formalities of Fissile Material Storage

Let  $s_1$  be the low-security storage cost. Let  $s_2$  be the high-security storage cost. Let  $l$  be the fissile material loss. Assume that  $P(l | s_1) > 0$ . Let  $u$  be the use of fissile material in a nuclear terror event. Assume that  $P(u | l) > 0$ . Let  $w$  be the cost of war to the negligent state. Let  $r$  be the probability of retaliation given a nuclear terror event. Let  $y$  be the cost of yielding offensive nuclear capabilities to the negligent state. Let  $l$  be the probability of fissile loss. The expected utility to the negligent state of the status quo, substandard storage, is:

$$E(u_1) = -s_1 - P(l | s_1)P(u | l)wr$$

Let  $i$  be the incentives of CRT. The expected utility to the negligent state of increasing the security of fissile material storage to a world-class level is:

$$E(u_2) = -s_2 + i_{s_2}$$

The expected utility of relinquishing all weapons-grade fissile material is:

$$E(u_3) = -y + i_y$$

Note that the expected utility of the status quo is decreasing as the probability of retaliation,  $r$ , increases. It likewise decreases with the cost of war to the negligent state,  $w$ .

$$\frac{\partial E(u_1)}{\partial w} = -P(l | s_1)P(u | l)r$$
$$\frac{\partial E(u_1)}{\partial r} = -P(l | s_1)P(u | l)w$$

Thus by increasing the probability of retaliation and/or the cost of war to the negligent state, the negligent state has increased incentives to either secure its fissile material or give up its fissile material (and offensive nuclear capability) entirely.